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U.S. Department of the Interior
Bureau of Land Management
Wyoming State Office

Rawlins Field Office

April 2000

FINAL
Environmental Impact Statement
South Baggs Area
Natural Gas Development Project
Carbon County, Wyoming

MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/WY/PL-00/012+1310

I

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003-1828

In Reply Refer To:

1793 (930)

March 31, 2000

Dear Reader:

This Final Environmental Impact Statement (FEIS) on the proposed South Baggs Area Natural Gas Development Project located in Carbon County, Wyoming, is submitted for your review and comment. The FEIS has been prepared pursuant to Title 40, Code of Federal Regulations, Parts 1500-1508, to analyze the potential impacts from natural gas exploration and development. This document informs the public of the anticipated impacts of the proposed development and alternatives to that proposal. The Bureau of Land Management's (BLM) preferred alternative for this project is the Proposed Action with additional mitigation measures which would reduce environmental impacts.

The FEIS contains corrected and new material which supplements the Draft Environmental Impact Statement (DEIS) issued May 14, 1999. The FEIS and the DEIS comprise the complete document. Please refer to the DEIS for more detailed analyses and descriptions of the proposed action and alternatives.

A copy of this FEIS has been sent to affected Government agencies and to those persons who either responded to scoping the DEIS, or otherwise indicated to BLM, they wished to receive the document. Copies of the FEIS are available upon request at the following location:

Bureau of Land Management
Rawlins Field Office
1300 North Third Street
Rawlins, WY 82301
Telephone (307) 324-4200
e-mail: rawlins_wymail@blm.gov

This FEIS is not the decision document. A Record of Decision will be prepared and made available to the public, but not until at least 30 days after the Environmental Protection Agency (EPA) has published their Notice of Availability of this FEIS in the Federal Register. We anticipate EPA will publish that notice April 14, 2000.

II

Comments on the content of this FEIS should be sent to the Rawlins Field Office at the address indicated above. If you wish to comment on the FEIS, we request you make your comments as specific as possible. Comments will be more helpful if they include suggested changes, sources, or methodologies. Opinions or preference will not receive a formal response; however, BLM will consider them in its decision.

Comments, including names and street addresses of respondents, will be available for public review at the address listed above during regular business hours (7:45 a.m. - 4:30 p.m.) Monday through Friday, except holidays. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

The BLM appreciates the individuals, organizations, Federal, State, and local governments who participated in the environmental analysis process. Your involvement has enhanced the integrity of the EIS and the public land manager's ability to make an informed decision.

Sincerely,

Alan R. Pierson
State Director

Attachment

DEPARTMENT OF THE INTERIOR

FINAL

ENVIRONMENTAL IMPACT STATEMENT

on the

SOUTH BAGGS AREA

NATURAL GAS DEVELOPMENT PROJECT

Carbon County, Wyoming

Prepared by

This Environmental Impact Statement was prepared by *Gary Holsan Environmental Planning*, an environmental consulting firm, with the guidance, participation, and independent evaluation of the Bureau of Land Management (BLM). The BLM, in accordance with Federal regulation 40 CFR 1506.5(a) and (b), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.

April 2000

IV

South Baggs Area
Natural Gas Development Project

Carbon County, Wyoming

ENVIRONMENTAL IMPACT STATEMENT

[ ] Draft [X] Final

Lead Agency:

U.S. Department of the Interior, Bureau of Land Management

Cooperating Agencies:

None

Counties That Could Be Directly Affected:

Carbon County, Wyoming

Abstract:

The Final EIS, in combination with the previously released Draft EIS, analyzes a proposal by Merit Energy Company (Merit) to continue to drill additional development wells in their leased acreage within the South Baggs natural gas development area (approximately 12,352 acres) of southcentral Wyoming.

The South Baggs project is located in Carbon County, Wyoming. The project area is generally located within Townships 12 and 13 North (T12-13N), Ranges 92 and 93 West (R92-93W), 6th Principal Meridian. The area is accessed by the two-lane paved Wyoming State Highway 789 from Interstate 80 (I-80) at Creston Junction south to Baggs, then west for approximately 3 miles on graveled Carbon County Road 700 (Poison Buttes Road) to the project area. Access to the interior of the project area is provided by an existing road network developed to service prior and ongoing drilling and production activities.

Merit proposes to drill and develop 50 natural gas wells in the South Baggs Natural Gas Production Area over a period of approximately 10 years, in addition to existing operations within the project area. The proposed development wells, access roads, pipelines, and other ancillary facilities located on public lands would be permitted with the BLM and the Wyoming Oil and Gas Conservation Commission (WOGCC). Facilities located on privately owned surface would be permitted with the appropriate surface owner. The proposed development is in addition to approximately 43 wells that have been drilled and developed in the project area. The precise number of additional wells, locations of the wells, and timing of drilling associated with the proposed natural gas development project would be directed by the success of development

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drilling and production technology, and economic considerations.

This EIS analyzes the impacts of the Proposed Action, alternatives to the Proposed Action, and the No Action Alternative. The EIS describes the physical, biological, cultural, historic, and socioeconomic resources in and surrounding the project area. The focus for impact analysis was based upon resource issues and concerns identified during public scoping.

Potential impacts of concern from development are to recreation and visual impacts; raptor breeding and nesting habitat and populations; special status plant and wildlife species; soil erosion and sediment increases within the project area; impacts to air quality; socioeconomic impacts to Carbon County; and cumulative effects.

Other Environmental Review or Consultation Requirements:

A Biological Assessment (BA) has been prepared separate from this EIS, and in compliance with Section 7(c) of the Endangered Species Act (as amended), for the purpose of identifying any endangered or threatened species which are likely to be affected by the proposed action.

Lead Agency Contact:

For further information, contact Larry Jackson at the Rawlins Field Office, (307) 328-4231.

Comments on this draft EIS should be submitted in writing to :

Larry Jackson, Project Coordinator
Rawlins Field Office
1300 North 3rd Street
P.O. Box 2407
Rawlins, Wyoming 82301

e-mail: rawlins_wymail@blm.gov

Final EIS Made Available to EPA and Public: **April 14, 2000**

Final EIS Comments Must Be Received By: **May 15, 2000**

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PREFACE

The purpose of this Final environmental impact statement (EIS) for the South Baggs Area Natural Gas Development Project is to supplement the Draft EIS which was published in May 1999. Reviewed together, the Draft and Final EISs incorporate the description of the proposed project, other alternatives including the "No Action" alternative, the affected environment, as well as the analyses of potential environmental consequences resulting from construction, operation, and abandonment of the proposed project. This Final EIS should not be considered as a complete EIS, nor as a decision document. This FEIS is organized into five sections:

- Section 1, *Executive Summary* - Information presented in this section describes the NEPA process utilized in the analysis, briefly describes the Proposed Action and alternatives, provides a summary of the resource elements analyzed and a summary of their cumulative effects, and describes the agency-preferred alternative.

- Section 2, *Addendum and Errata* - Provides an addendum of additional discussion and studies which have been completed to address comments received during the comment period on the draft EIS. It also includes an errata section showing changes in the text of the Draft EIS which resulted from public comment or internal BLM review.

- Section 3, *Consultation and Coordination* - Summarizes the consultation and coordination that occurred during the preparation of the South Baggs Area EIS and background information regarding the consultation and coordination process.

- Section 4, *Comment Letters Received on the Draft EIS* - Provides a copy of the comment letters received during the public comment period on the draft EIS.

- Section 5, *Response to Comments* - Provides BLM's responses to those comments shown in Section 4.

In response to comments received concerning air quality impacts with implementation of the South Baggs Area Natural Gas Development Project and other projects, *TRC Environmental Consulting, Inc.*, and *Earth Tech, Inc.*, prepared a Revised Air Quality Impact Assessment Technical Support Document (USDI-BLM 1999b), and the BLM revised the air quality sections of the draft EIS.

Although the final predicted air quality impacts did not change significantly, the DEIS air quality impact assessment was revised in order to address the following items: 1) the CD/WII near-field particulate matter emission assumptions and impact analyses was revised using Rock Springs, Wyoming, meteorological data; 2) potential well blowdown emissions were included and the hazardous air pollutant (HAP) and ozone impact analyses were revised; 3) potential oxides of nitrogen (NO_x) emissions for the CD/WII wells were corrected; 4) potential NO_x and sulfur dioxide (SO_2) emissions from the Lost Cabin Gas Plant were corrected for seasonal operation; 5) potential particulate matter emissions from the Seneca Coal facility (Colorado permit no. 82R0258F) were corrected; 6) potential particulate matter, NO_x and SO_2 emissions from the SF Phosphates facility (Wyoming permit no. CT-550A4) were added to the emissions inventory; 7) several other Colorado emission sources were correctly analyzed as potential NO_x emissions, rather than as SO_2 emissions reported in the DEIS; 8) hourly scaling factors were applied to several Wyoming portable emission sources; and 9) a calculation error regarding potential formaldehyde impacts reported in the DEIS was corrected in the FEIS. Based on these revisions, potential air quality impacts were re-analyzed

/X

and reported in both the FEIS and a Revised Air Quality Impact Assessment Technical Support Document (USDI-BLM 1999b) text.

The draft and final EISs have been prepared according to the requirements of the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's regulations for implementing NEPA, effective July 30, 1979.

The analyses were based on a proposed schedule and maximum assumed level of development contained in the draft EIS. As the project is implemented, the impacts will be evaluated to determine if they fall within the parameters discussed in the draft and final EISs. Any major change in project design would require additional environmental analysis.

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ABBREVIATIONS/ACRONYMS

ABBREVIATIONS/ACRONYMS

AACL	Acceptable Ambient Concentration Levels
ac-ft	acre feet
ac-ft/mi^2/yr	acre feet per square mile per year
ac-ft/yr	acre feet per year
ACHP	Advisory Council on Historic Preservation
Act	Endangered Species Act of 1973
ADT	average daily traffic
AML	Abandoned Mine Lands
analysis area	South Baggs Natural Gas Production Area
ANC	Acid Neutralizing Capacity
ANS	artifical nesting structure
AO	authorized officer
APD	Application for Permit to Drill
AQRV	Air Quality Related Values
AS-WWC	Archaeological Services of Western Wyoming College
AUM	Animal Unit Month
BA	Biological Assessment
BACT	Best Available Control Technology
bbl	barrel
BLM	Bureau of Land Management
BWPD	barrel of water per day
CBG	Creston/Blue Gap Natural Gas Project
CDPHE-APCD	Colorado Department of Public Health and Environment, Air Pollution Control Division
CEQ	Council for Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIA	cumulative impacts analysis
CMP	corrugated metal pipe
CO	carbon monoxide
COE	Corps of Engineers
CWA	Clean Water Act
dBA	decibel
DEQ	Department of Environmental Quality
dia.	diameter
EA	environmental assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act of 1973
F	Farenheit
FAA	USDT Federal Aviation Administration
FEMA	Federal Emergency Management Act
FLPMA	Federal Land Policy and Management Act
FS	Forest Service
ft	foot (or feet)
FWS	U.S. Fish and Wildlife Service

ABBREVIATIONS/ACRONYMS

g/hp-hr	grams per horsepower-hour
gpm	gallons per minute
GPS	Global Positioning System
GWA II	Greater Wamsutter Area II
HAP	Hazardous Air Pollutants
hp	horsepower
H_2S	hydrogen sulfide
HWA	Hayden-Wing Associates
I-80	Interstate 80
ID	interdisciplinary
IDT	interdisciplinary team
IMPROVE	Interagency Monitoring of PROtected Visual Environments
IWAQM	Interagency Workgroup on Air Quality Modeling
km	kilometer
LOP	Life of Project
m	meter
MAC	Metcalf Archaeological Consultants
MEI	Maximally Exposed Individual
Merit	Merit Energy Company
mg/l	milligrams per liter
MLE	Most Likely Exposure
MMCFD	million cubic feet per day
mph	miles per hour
MSDS	Material Safety Data Sheet
MSHA	Mine Saftey Hazard Administration
N_2	Nitrogen
NA	not applicable
n.d.	no date
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NO_x	oxides of nitrogen
NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSI	no significant impacts
NTU	Nephelometric Turbidity Unit
NWI	National Wetlands Inventory
OSHA	Occupational Safety and Health Administration
P&A'd	plugged and abandoned
pH	acidity measurement unit (negative logarithm of the hydrogen ion [H^+] concentration)
PI	Petroleum Information, Inc.
PIC	Planning Information Corporation
PM-2.5	particulate matter less than 2.5 microns in effective diameter
PM-10	particulate matter less than 10 microns in effective diameter
POD	Plan of Development

ABBREVIATIONS/ACRONYMS

PSD	Prevention of Significant Deterioration
PPP	pollution prevention plan
RCRA	Resource Conservation and Recovery Act
RFFAs	reasonably foreseeable future actions
RFO	Rawlins Field Office
RMP	Resource Management Plan
RMOGA	Rocky Mountain Oil & Gas Association
ROD	Record of Decision
ROW	Right-of-Way
SAR	Sodium Absorption Ratio
SARA	Superfund Amendments and Reauthorization Act
SBU	South Baggs Unit
SCS	Soil Conservation Service
SEO	Wyoming State Engineer's Office
SHPO	State Historic Preservation Office
SI	shut-in
SO_2	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasures
sq.	square
t/ac/yr	tons per acre per year
t/yr	tons per year
TDS	total dissolved solids
TPQ	threshold planning quantity
TSP	Total Suspended Particulate Matter
UAD	unquantified additional development
ug/m^3	micrograms per cubic meter
UNKI	unknown impact until site-specific location is proposed and surveys are completed
USDA	United States Department of Agriculture
USDC	United States Department of Commerce
USDI	United States Department of the Interior
USGS	United States Geological Survey
USLE	Unified soil loss equation
VOC	Volatile Organic Compounds
VRM	Visual Resource Management
w/	with
w/i	within
w/o	without
WDEQ-AQD	Wyoming Department of Environmental Quality, Air Quality Division
WESTAR	Western States' Air Resource Council
WET	Wetland Evaluation Technique
WGFD	Wyoming Game and Fish Department
WOGCC	Wyoming Oil and Gas Conservation Commission
WOS	Wildlife Observation System
WSGS	Wyoming State Geological Survey
WTA	Wyoming Taxpayers Association
WWC	Western Wyoming College

WYNDD	Wyoming Natural Diversity Database
WYO 789	Wyoming Highway 789
μeq/l	microequivalents per liter
$\mu g/m^3$	micrograms per cubic meter
°F	degrees Fahrenheit

SECTION 1:

EXECUTIVE SUMMARY

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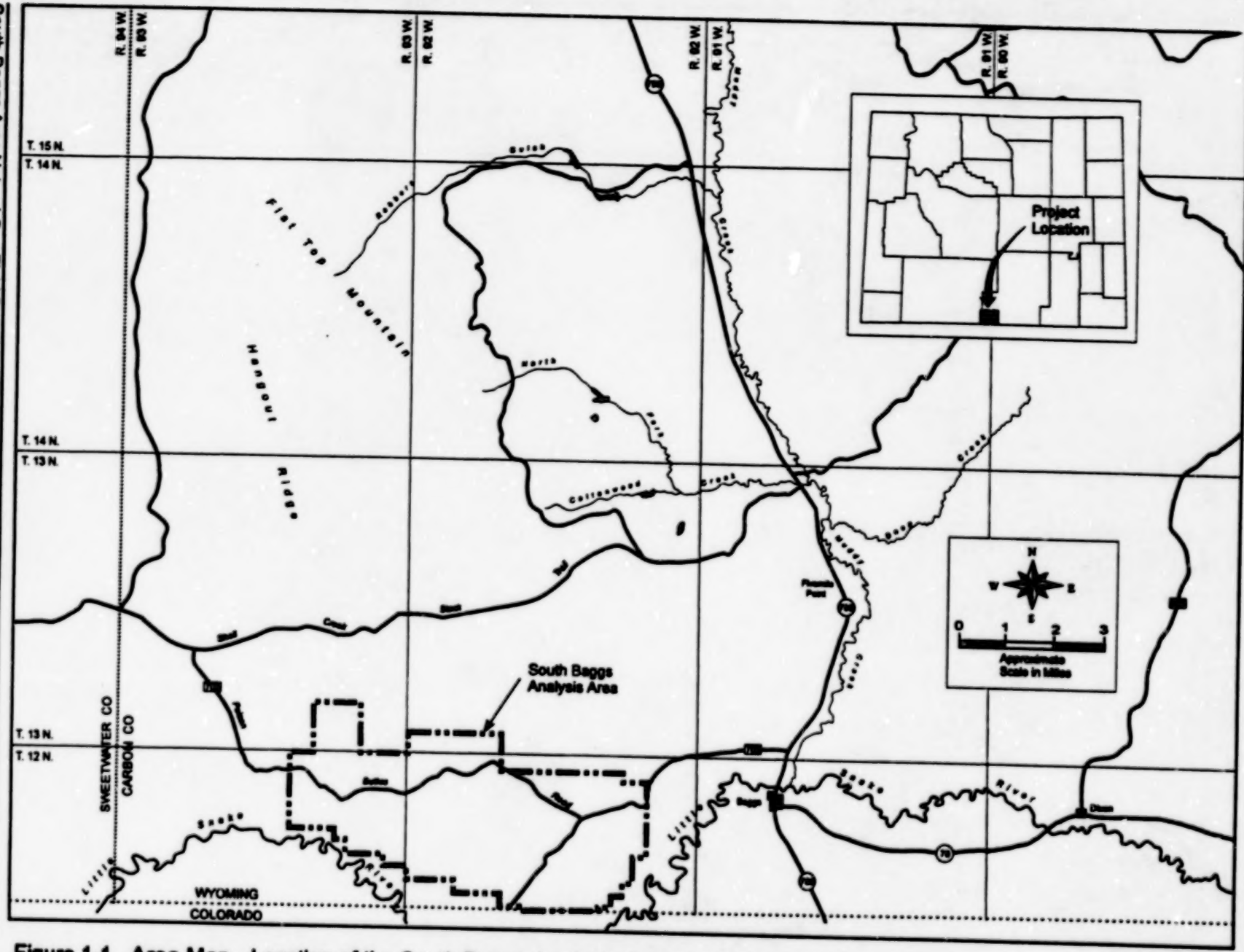

Figure 1-1. Area Map - Location of the South Baggs Analysis Area in Southcentral Wyoming.

SECTION 1: EXECUTIVE SUMMARY

1.0 INTRODUCTION

This Final Environmental Impact Statement (FEIS) analyzes the impacts of drilling and production operations in the South Baggs natural gas producing area of southcentral Wyoming (Figure 1-1). The South Baggs project area is located in Carbon County, Wyoming within Townships 12 and 13 North (T12-13N), Ranges 92 and 93 West (R92-93W), 6th Principal Meridian. The project area encompasses approximately 12,352 acres of mixed federal, State, and private lands. Of this total, approximately 10,067 acres are managed by the U.S. Department of the Interior (USDI) Bureau of Land Management (BLM) and 2,285 acres are private lands.

This FEIS has been prepared pursuant to the National Environmental Policy Act (NEPA) and addresses three field development scenarios (Proposed Action, Alternative A, and Alternative B), and a "No Action" alternative- Alternative C. Details on the Proposed Action and alternatives are described in the DEIS according to the following chapters. **Chapter 1** defines the Purpose and Need for the proposed project. **Chapter 2** details the parameters of the Proposed Action and other alternatives as well as providing a summary of proposed mitigation and monitoring measures to avoid or reduce impacts proposed by the project operators. **Chapter 3** of the DEIS discusses the areas and resources that would be affected under each alternative. **Chapter 4** examines the environmental consequences to each resource under each alternative and also provides a summary of additional mitigation measures by resource discipline which were identified during the analysis process. The measures and requirements in the DEIS describe how implementation of the Proposed Action or alternatives should be managed to assure minimal impacts in the South Baggs project area and adjacent lands. **Chapter 5** describes the mitigation and monitoring measures that should be implemented to assure compliance with resource management goals and objectives provided in the Great Divide Resource Area Resource Management Plan (RMP) (Record of Decision and Approved Resource Management Plan, USDI-BLM 1990a); and applicable lease stipulations within the South Baggs project area. **Chapter 6** of the DEIS summarizes the consultation and coordination accomplished with various federal, State, county, and local agencies, elected representatives, environmental and citizen groups, industries, and individuals potentially concerned with issues regarding the proposed drilling action and alternatives.

Management of federal lands within the South Baggs project area, including natural gas drilling and development activities, is provided by the Great Divide Resource Area RMP. The proposed natural gas development project and alternatives are in conformance with management objectives provided in the RMP, subject to implementation of prescribed mitigation measures.

Drilling attempts within the project area have been successful. As of November 1, 1999, 46 natural gas wells have been drilled in the project area.

The DEIS addresses a Proposed Action and three alternatives as described in greater detail in the following section and briefly summarized here.

- The Proposed Action would increase natural gas production in the South Baggs project area by allowing the operators to drill and develop approximately 50 natural gas wells in addition to existing operations within the project area. The Proposed Action was determined by summarizing drilling plans projected by the South Baggs operator, Merit Energy Company

(Merit) over the next ten-year planning period. Total life expectancy of the South Baggs Natural Gas Production Area is estimated by Merit to be approximately 35 years. Drilling estimations were based on reasonably foreseeable spacing and drilling projections in areas within the project area where the planned production and development activities would occur, as well as development of related roads, pipelines, and production facilities.

- Alternative A provides for a minimum density of surface well pads and production facilities. Alternative A would allow the operators to drill and develop 40 new wells within the project area in addition to existing operations. The technical requirements for Alternative A, including the project-wide mitigation measures, are the same as described for the Proposed Action; however, less overall site disturbance would be necessary for the well sites, access roads, pipelines, and other ancillary facilities. The precise number of wells, locations of the wells, and timing of drilling would be directed by the success of development drilling and production technology, and economic considerations such as cost of development of leases having marginal profitability.

- Alternative B provides a maximum development scenario of 90 wells, with related activities and facilities in addition to existing operations. The technical requirements for Alternative B, including the project-wide mitigation measures, are the same as described for the Proposed Action; however, more overall site disturbance would be necessary for the well sites, access roads, pipelines, and other ancillary facilities than the Proposed Action and Alternative A. Also, the precise number of wells, locations of the wells, and timing of drilling would be directed by the success of development drilling and production technology, and economic considerations such as cost of development of leases having marginal profitability.

- Alternative C, the No Action Alternative, implies that Applications for Permit to Drill (APDs) and right-of-way (ROW) actions may be granted by the BLM on a case-by-case basis through individual project and site-specific environmental analyses.

Under any of the alternatives, development could occur on State and private lands within the analysis area under authorizations granted by the Wyoming Oil and Gas Conservation Commission (WOGCC).

1.1 PROPOSED ACTION AND ALTERNATIVES

The Proposed Action and Alternatives A and B would involve clearing land and constructing well sites, access roads, pipelines, and associated facilities. Under each development alternative, and where practical, pipelines would be routed along existing and/or new roadways, with an estimated disturbance width of 50 feet and an estimated average length of 0.33 mile. New pipeline construction to each well site is estimated to impact 0.8 acre. New road construction necessary to access each new well site is estimated at 0.33 mile per well site or approximately 1.8 acres. The average well site disturbance is estimated to be 3.25 acres, depending on site conditions and Formation being drilled. A 1.4-acre compressor station would be constructed under all alternatives.

1.1.1 Proposed Action

The Proposed Action would allow Merit to drill and develop 50 natural gas wells in the South Baggs Natural Gas Production Area over a period of approximately 10 years in addition to existing operations within the project area. Approximately 5 wells would be drilled within one year following project approval utilizing one drilling rig. Completion operations for these wells would commence as soon as the drilling rig moves off the drill pad. One completion rig would be utilized continuously for completion operations. The remaining wells would be drilled and completed with one drill rig throughout the remainder of the planned 10 year drilling period.

Construction of the Proposed Action would involve 50.0 acres of site disturbance resulting from pipeline construction (0.8 acre per well separate from the road, 0.2 acre combined with access roads), 80.0 acres from access road construction (1.6 acres per well), and 162.5 acres from well sites (50 well sites with 3.25 acres of disturbance per site). A 1.4-acre compressor station would be constructed under all alternatives.

Impacts within the South Baggs project area would be reduced upon reclamation of pipeline ROWs and unused portions of the drill pads and roadway disturbances during the production phase for each alternative. Under the Proposed Action, reclamation would reduce impacts to 101.4 acres. This includes 70.0 acres for well pads (1.4 acre per pad) and 30.0 acres for roads (approximately 16.0 feet wide, or 0.6 acres per well), and 0.0 acres for pipelines. The compressor station would not be reclaimed since the full size of the site would be needed during production. The cumulative impact for the Proposed Action would be 211.4 acres (101.4 acres of disturbance remaining following reclamation plus 110.0 acres of existing unreclaimed disturbance) or 1.7 percent of the South Baggs project area.

1.1.2 Alternative A

Alternative A represents a minimum level of additional site disturbance and would allow Merit to drill and develop approximately 40 new well sites with related facilities over the 10-year planning period. Development under Alternative A is in addition to the 43 wells that have been drilled and developed in the project area. The technical requirements for Alternative A, including the project-wide mitigation measures, are the same as described for the Proposed Action, however, less overall site disturbance would be necessary for the well sites, access roads, pipelines, and other ancillary facilities.

The construction of this alternative would involve 130.0 acres of drill site disturbance, 64.0 acres (1.6 acres per well) of road disturbance, 40.0 acres of pipeline disturbance, and 1.4 acres of compressor station disturbance, for a total of approximately 235.4 acres. A large portion of this area would be reclaimed as described under the Proposed Action. Alternative A impacts would decrease to 81.4 acres, with cumulative impacts affecting 191.4 acres or 1.5 percent of the South Baggs project area. The cumulative impact for Alternative A would be 191.4 acres (81.4 acres of disturbance remaining following reclamation plus 110.0 acres of existing unreclaimed disturbance) or 1.5 percent of the South Baggs project area.

1.1.3 Alternative B

Alternative B provides a maximum development scenario of 90 wells, with related activities and facilities. The precise number of wells, locations of the wells, and timing of drilling would be directed by the success of development drilling and production technology, and economic considerations such as cost of development of leases having marginal profitability.

The technical requirements for Alternative B are the same as described for the Proposed Action and Alternative A; however more overall site disturbance requirements would be necessary for the additional well sites, access roads, and pipelines.

The construction of this alternative would involve 292.5 acres of drill site disturbance, 144.0 acres (1.6 acres per well) of road disturbance, 90.0 acres of pipeline disturbance, and 1.4 acres of compressor station disturbance, for a total of approximately 527.9 acres. A large portion of this area would be reclaimed as described under the Proposed Action, thus reducing the total disturbance by 346.5 acres to 181.4 acres. The cumulative impact for Alternative B would be 291.4 acres (181.4 acres of disturbance remaining following reclamation plus 110.0 acres of existing unreclaimed disturbance) or 2.4 percent of the South Baggs project area.

1.1.4 Alternative C - No Action

Alternative C, the "No Action" implies that on-going natural gas production activities would be allowed to continue by the BLM in the South Baggs project area, but the Proposed Action and Alternatives A and B would be disallowed. Additional APDs and ROW actions would be considered by the BLM for federal land on a case-by-case basis through individual project and site-specific environmental analysis. Transport of natural gas products would be allowed from those wells within the South Baggs project area that are currently productive. Additional gas development would occur on private lands within the project area under APDs approved by the WOGCC.

1.1.5 Major Impact Conclusions

The South Baggs Natural Gas Development project could cause direct and indirect, short-term and long-term, as well as cumulative disturbance of the human and natural environments. Potential environmental impacts that could result from implementation of the Proposed Action and Alternatives A and B are detailed in Chapter 4 of the DEIS. A summary of proposed mitigation and monitoring measures to avoid or reduce impacts as committed by the South Baggs operators is presented in Chapter 2 of the DEIS. Chapter 4 summarizes the environmental impacts for each resource discipline and mitigation measures identified to avoid or reduce the impacts. These impacts, which were identified during the analysis process, are summarized below.

2.0 RESOURCE ELEMENTS ANALYZED

2.1 Geology/Minerals/Paleontology

Implementation of the Proposed Action and Alternatives A, B and C would result in construction

excavation associated with the development of well pads, access roads, pipelines and other production facilities which could directly result in the exposure and damage or destruction of scientifically significant fossil resources. The potential magnitude of impact to fossil resources associated with the action alternatives (the Proposed Action and Alternatives A and B) varies proportionally with the total number of wells which would be developed under each alternative. The magnitude of impact for Alternative C - No Action, which may allow additional APDs and ROW action on a case-by-case basis, is unknown at present and would depend on the specific action taken and the specific area involved. Potential for impacts to project facilities as a result of seismic activity is low, as is the potential for landslides and road subsidence that would temporarily close access roads. No significant impacts to important surface resources or other geologic resources would occur under the Proposed Action. Mitigation measures discussed in Chapters 2 and 4 should reduce potential impacts to geologic/paleontologic resources.

Beneficial impacts under the action alternatives include the unanticipated discovery of previously unknown fossil resources within the project area. The potential beneficial impact to fossil resources is not precisely known because field survey of the project area has not been conducted.

2.2 Air Quality

Although the final predicted air quality impacts did not change significantly, the DEIS air quality impact assessment was revised in order to address the following items: 1) the CD/WII near-field particulate matter emission assumptions and impact analyses was revised using Rock Springs, Wyoming, meteorological data; 2) potential well blowdown emissions were included and the hazardous air pollutant (HAP) and ozone impact analyses were revised; 3) potential oxides of nitrogen (NO_x) emissions for the CD/WII wells were corrected; 4) potential NO_x and sulfur dioxide (SO_2) emissions from the Lost Cabin Gas Plant were corrected for seasonal operation; 5) potential particulate matter emissions from the Seneca Coal facility (Colorado permit no. 82R0258F) were corrected; 6) potential particulate matter, NO_x and SO_2 emissions from the SF Phosphates facility (Wyoming permit no. CT-550A4) were added to the emissions inventory; 7) several other Colorado emission sources were correctly analyzed as potential NO_x emissions, rather than as SO_2 emissions reported in the DEIS; 8) hourly scaling factors were applied to several Wyoming portable emission sources; and 9) a calculation error regarding potential formaldehyde impacts reported in the DEIS was corrected in the FEIS. Based on these revisions, potential air quality impacts were re-analyzed and reported in both the FEIS and a Revised Air Quality Impact Assessment Technical Support Document (USDI-BLM 1999b) text.

Gaseous air pollutant emissions discharged from the wellhead (e.g.; venting and flaring) and from natural gas compressor activities, as well as dust and exhaust from construction and maintenance activities, have been identified as issues of concern.

Concerns were also identified concerning potential air quality impacts at distant PSD Class I and II wilderness and other sensitive areas administered by the USDA-Forest Service, the USDI-National Park Service, and the Wind River Environmental Commission. The primary concerns involved potential visibility and atmospheric deposition (acid rain) impacts within downwind sensitive areas, particularly from natural gas compressor operations.

Since BLM approved activities must comply with all applicable local, state, tribal and Federal air quality laws, statues, regulations, standards and implementation plans, significant adverse impacts to air quality are not anticipated to occur from implementation of any of the alternative actions.

Localized short-term increases in carbon monoxide, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide concentrations would occur, but maximum concentrations would be below applicable ambient air quality standards.

Similarly, hazardous air pollutant concentrations (to drill rig operators) and the related incremental cancer risks at residences (assumed to be located either 500 meters from a well or 100 meters from the compressor station) would be below significance levels, even at the maximum assumed emission rates.

Although not a regulatory PSD increment consumption analysis, potential direct project impacts would also be below applicable PSD Class I and II increment levels.

No significant atmospheric deposition (acid rain) impacts are predicted to occur in sensitive area lakes, including extremely sensitive lakes in the mandatory Federal PSD Class I Mount Zirkel Wilderness Area.

Assuming project and other "reasonably foreseeable" natural gas compressors' NO_x emission rates of 2 g/hp-hr (which is possible, but greater than levels recently permitted by WDEQ-AQD), there is a potential for a "just noticeable change" cumulative visibility impact (greater than a 1.0 deciview) on a single day at the mandatory Federal PSD Class I Rawah Wilderness Area (at 1.69 deciview). Direct project operations (under the Proposed Action or any Alterative, including "No Action") would not exceed this threshold alone.

The visibility impact analysis assumed a 1.0 deciview "just noticeable change" would be a "reasonably foreseeable significant adverse" impact, although there are no state or Federal regulatory visibility standards. Finally, given the "reasonable, but conservative" nature of the cumulative air quality impact analysis (assuming all proposed wells would go into full production for the life of the project, all compressors operate continuously at the 2 gm/hp-hr NO_x emission rate, etc.), it is unlikely that a "just noticeable change" would actually occur at the mandatory Federal PSD Class I Rawah Wilderness Area even on a single day due to the cumulative sources combined.

2.3 Soils

The majority of the South Baggs analysis area is classified as sensitive soil and such areas cannot be totally avoided during construction operations. Impacts to soils resulting from drill pad, access road, facility site, and pipeline ROW construction would include removal of vegetation, exposure of the soil, mixing of soil horizons, soil compaction, loss of topsoil productivity, and increased susceptibility of the soil to wind and water erosion. These impacts could increase runoff, erosion, and off-site sedimentation. Analysis presented in Chapter 4 of the DEIS recommends that particular attention be given to avoiding steep slopes greater than 25 percent, badlands, sandy soils, and soils with high water tables and/or which are subject to inundation and thus, minimize the chance of a significant impact. These impacts would be kept to non-significant levels with application of the mitigation measures in Chapter 2 and the control measures recommended in Appendix B

(Reclamation Recommendations).

Implementation of the Proposed Action and action alternatives (A and B) would initially affect 293.9 acres, 235.4 acres, and 527.9 acres of soils, respectively, during project construction. This would represent approximately 2.4 percent, 1.9 percent, and 4.3 percent of the total South Baggs area for the Proposed Action, Alternative A, and Alternative B, respectively. Reclamation efforts during well production would reduce long-term impacts to 101.4 acres, 81.4 acres, and 181.4 acres, respectively. Residual areas of impact would represent approximately 0.8, 0.7, and 1.5 percent of the project area, respectively. When combined with the existing unreclaimed disturbance of 110 acres, neither temporary or long-term disturbance areas would exceed the 10 percent threshold criteria.

2.4 Water Resources

Potential impacts that could occur due to the proposed project include increased surface water runoff and off-site sedimentation due to soil disturbance; increased salt loading and water quality impairment of surface waters; and channel morphology changes due to road and pipeline crossings. The magnitudes of impacts to water resources would depend on the proximity of the disturbance to the drainage channel, slope aspect and gradient, degree and area of soil disturbance, soil character, duration of time within which construction activities would occur, and the timely implementation and success/failure of mitigation measures. Impacts would likely be greatest shortly after the start of construction activities and would likely decrease in time due to natural stabilization, reclamation, and revegetation efforts. Construction activities would occur over a relatively short period (probably within a 10-year period); therefore, the majority of the disturbance would be short-lived. Petroleum products and other chemicals could be accidentally spilled resulting in surface and groundwater contamination. Similarly, reserve and evaporative pits could leak and degrade surface and groundwater if liners were punctured or liners were not installed. Authorization of the proposed project would require full compliance with RMP management directives that relate to surface and groundwater protection, Executive Order 11988 (flood plains protection), and the Federal Clean Water Act (CWA) in regard to protection of water quality and compliance with Section 404. Most adverse impacts to water resources could be avoided or reduced through implementation of control measures identified in Chapter 2, mitigation listed in Chapter 4, Appendix A, and Appendix B.

Under the Proposed Action, no significant impacts on surface water or groundwater quality and quantity would occur. The magnitude of non-significant adverse impacts as compared to the Proposed Action would decrease under Alternative A but would be greater under Alternative B. The No Action alternative, Alternative C, would likely have a similar level of impact as described for Alternative A. Implementation of the Proposed Action alternative would require approximately 81.1 ac-ft of water during the construction, completion, and production phases, while Alternative A would require 64.5 ac-ft, and Alternative B would require 148.5 ac-ft.

2.5 Vegetation/Wetlands

Implementation of the Proposed Action and action alternatives (A and B) would initially affect 293.9 acres, 235.4 acres, and 527.9 acres of various vegetation cover types, respectively, during project construction. Reclamation efforts during well production would reduce impacts to 101.4 acres, 81.4 acres, and 181.4 acres, respectively.

Impacts to vegetation would include removal of cover types (potential to decrease diversity and density of desirable species) and the increased potential for noxious weed invasion and establishment. Except for waters of the U.S. (including wetlands and other special aquatic sites) and/or plant species of concern and their habitat, a reduction in vegetation density would not be significant because upland vegetation types are relatively common, cover large areas, have wide distribution, and occur with high frequency within the project area as well as on other lands within the Washakie basins.

Project implementation could potentially impact the area and functions of wetlands, special aquatic sites, and other waters of the U.S. Direct impacts could occur through filling, grading, and excavation; indirect impacts could occur through hydrologic modification, sedimentation, pollution, and disturbance. Due to the larger area of disturbance associated with road/pipeline ROW facilities, Alternative B would be more likely to affect waters of the U.S. than the other alternatives. Measures imposed by the RMP (USDI-BLM 1990a) and 404 permitting process would prevent or avoid impacts to jurisdictional wetlands and other special aquatic sites. Further, compliance with Section 404(b)(1) guidelines would remove the potential for significant impacts under all alternatives.

All alternatives have potential to affect plant species of concern or habitat for such species. With implementation of Chapter 2 mitigation measures and additional mitigation outlined in Chapter 4, no significant impacts are anticipated. No listed plant species or species proposed for listing under the ESA would be impacted as none occur in the project area.

The duration and magnitude of impacts to vegetation cover types would depend on the locations of well sites and access roads, the success of mitigation and revegetation efforts, and the time needed for natural succession to return revegetated areas to predisturbance conditions.

Reclamation would be accomplished according to a site-specific reclamation and revegetation plan that uses best-management practices. Revegetation would involve the use of plant materials that meet specific reclamation objectives in terms of soil erosion control; soil protection, stabilization, and fertilization; aesthetics; and compatibility with native vegetation adjacent to the disturbance area.

2.6 Range Resources and Other Land Uses

Construction of the Proposed Action would affect 293.9 acres (162.5 acres for well locations and associated facilities, 1.4 acres for ancillary facilities, 50.0 acres for pipelines, and 80.0 acres for road ROWs). Stocking rates within both the Poison Buttes and Oppenheimer Allotments average 14 acres per AUM. Depending on the actual locations of the drilling and ancillary facilities with respect to forage productivity, lost forage would be approximately 21 AUMs, or a reduction of about 1.2 percent of the current live stock forage use in the South Baggs project area. Once reclamation has been satisfactorily completed on all disturbed areas, the total area of impact would be reduced to approximately 101.4 acres. This would constitute a long-term loss of approximately 7 AUMs, or a reduction of about 0.4 percent of the current livestock forage use in the South Baggs project area. In addition, as existing, older production wells in the South Baggs project area are abandoned and reclaimed, additional land would become available for forage production. Actual amounts of additional forage available for livestock use following reclamation would be contingent on the success/failure of revegetation efforts.

The area removed from forage production under Alternative A (development of 40 additional natural gas wells) is estimated to be 235.4 acres, with a resultant loss of 17 AUMs. This represents a loss in stocking levels of about 1.0 percent throughout the South Baggs project area. Once reclamation has been satisfactorily completed on all disturbed areas, the total area of impact would be reduced to approximately 81.4 acres. This would constitute a long-term loss of approximately 6 AUMs, or a reduction of about 0.3 percent of the current livestock forage use in the South Baggs project area. Overall, this level of reduction should not affect the livestock use in the South Baggs project area, unless the well sites are located on areas where forage production is greater than the average in the project area.

Implementation of Alternative B (develop an additional 90 natural gas wells) would remove about 527.9 acres from forage production during the construction phase of development operations, or about 38 AUMs. This represents a loss in stocking levels of about 2.1 percent throughout the South Baggs project area. Once reclamation has been satisfactorily completed on all disturbed areas, the total area of impact would be reduced to approximately 181.4 acres. This would constitute a long-term loss of approximately 13 AUMs, or a reduction of about 0.7 percent of the current livestock forage use in the South Baggs project area. Overall, this level of reduction should not affect the livestock use in the South Baggs project area, unless the well sites are located on areas where forage production is greater than the average in the project area.

Alternative C would result in on-going site disturbance with an associated loss in forage production. The amount of forage production lost is unquantifiable since the anticipated level of development is not known.

The increased activity associated with drilling and production has the potential for disrupting livestock operations, particularly during the construction phase of development. Opportunities for vehicle-livestock collisions would increase. Also, the opportunity for livestock theft would likely increase as roads provide additional access into the allotments. However, additional roads in the South Baggs project area would allow livestock operators improved access into the area, thus potentially providing them with greater ease of livestock management operations such as herding, etc. The potential for problems would decrease once the wells were producing and the traffic volume reduced. The additional roads would have some advantages in that it would make some areas more accessible by vehicle for the livestock operators. Also, drilling may potentially result in the development of additional water wells which could be converted to livestock use. This would improve the ability of livestock to make efficient use of rangeland within the area, especially during dry years.

2.7 Wildlife

The implementation of the Proposed Action, Alternative A, or Alternative B would result in direct losses of habitat from surface disturbance associated with the construction of well sites and related access roads and pipelines. In addition, some wildlife species would be indirectly impacted by displacement from habitats in the vicinity of the project area due to the presence of human activities associated with the construction and operation of wells. The potential for collisions between wildlife and motor vehicles would also increase due to the construction of new roads and increased traffic levels on existing roads. The severity of these impacts would be expected to decrease with the completion of the construction phase and with the onset of reclamation efforts on many of the

disturbed areas.

The nature of impacts to wildlife is identical between the Proposed Action and Alternatives A and B. The magnitude of potential impacts would be greatest under Alternative B, however, because of the greater number of well sites and miles of associated access roads and pipelines. Implementation of the Proposed Action would disturb approximately 239.4 acres of wildlife habitat over the 10-year planning period. The reclamation of well, road, and pipeline construction activity would reduce the area disturbed by the Proposed Action to 101.4 acres. The implementation of Alternative A would disturb approximately 235.4 acres of wildlife habitat over the 10-year planning period. Reclamation of disturbed habitats would be the same as described for the Proposed Action resulting in post-reclamation disturbance of 81.4 acres under Alternative A. Implementation of Alternative B would disturb approximately 527.9 acres of wildlife habitat over the 10-year planning period. Reclamation of disturbed habitats would be the same as described for the Proposed Action resulting in post-reclamation disturbance of 181.4 acres under Alternative B.

2.8 Special Status Wildlife Species

The probability for impacts to special status wildlife species and the intensity of such impacts are consistently greater under Alternative B than the Proposed Action or Alternative A. However, the application of prescribed avoidance and mitigation measures (Section 2.1.4.2.9 and 2.1.4.2.10) as well as additional measures described in Section 4.8.5 of the DEIS would reduce the impact potential and allow for any of the action alternatives to be performed without significant impacts to wildlife.

2.9 Recreation

Well drilling, testing and production operations, and associated site preparation and construction activities have the potential to cause alterations to the recreation setting and recreation opportunities available to persons using the area. Some recreationists could be temporarily or permanently displaced from using certain locations associated with drilling and production activities. Displacement of recreationists could also result from changes in the numbers or distribution patterns of wildlife that attract hunters and wildlife observers to the area. The presence of construction and drilling equipment and associated increased evidence of human industrial activities in the area could reduce opportunities for recreationists seeking to experience solitude and isolation from human activity. Such changes could also result in displacement or redistribution of recreationists who would choose to avoid such conditions, as well as reduced satisfaction among others who might continue to engage in recreation activities in the area.

Alternative B would have significant short-term and long-term adverse impacts on the recreational resources of the project area. Impact Significance Criteria described in Chapter 4 , Section 4.9.2 of the DEIS, would be exceeded.

2.10 Visual Resources

The areas of higher Scenic Quality within the project area would be compromised by the Proposed Action and alternatives. Both short-term and long-term impacts to the visual resource would occur where patterns of area, line, form, color, and texture in the characteristic landscape would be contrasted by drilling equipment, production facilities, and/or construction related damage to

vegetation, topography or other visible features. The severity of impact depends upon scenic quality, sensitivity level, and distance zone of the affected environment, reclamation potential of the landscape disturbed, and the level of disturbance to the visual resource created by the Proposed Action.

Adverse impacts from well construction would occur within the short term due to contrast in line, form, color and textures associated with equipment, surface disturbance, and fugitive dust juxtaposed with the existing landscape. Long-term impacts would result from production facilities, access roads, pipelines, and fugitive dust.

The project area has a Class 3 Visual Resource Management (VIM) classification. Successful implementation of recommended mitigation measures would reduce contrasts to levels permitted in Class 3 for the Proposed Action and Alternative A. Short-term and long-term impacts associated with Alternative B would be considerably higher than the Proposed Action or Alternative A. The addition of 90 wells (approximately 4.5 wells per section) would greatly limit options for selecting sites that would be screened from view The level of contrast produced by Alternative B would exceed Class 3 standards. Mitigation could reduce the level of contrast but not to Class 3 standards. The impact of Alternative B would be considered significant. Impacts to visual resources under Alternative C would not exceed the level of contrast allowed in a Class 3 zone.

2.11 Cultural Resources

Potential impacts to specific eligible or unevaluated properties are unknown at this time. Given the South Baggs proposal is in an area of high to moderate site density, development would likely encounter significant cultural resources.

In general, the project area has a moderate to high site density, and therefore, high archaeological sensitivity. Certain geomorphic situations have a greater archaeological potential than other areas especially in terms of significant cultural resources. These situations include eolian deposits (sand dunes, sand shadows and sand sheets) and alluvial deposits along major drainages.

Although the project area has a high degree of archaeological sensitivity, impacts to known cultural properties would not be significant with implementation of the Proposed Action or alternatives. Potential impacts to known and anticipated cultural resources would be alleviated through appropriate mitigation measures.

2.12 Socioeconomics

Given the relatively few wells to be drilled annually under the Proposed Action, and the fact that anticipated drilling levels are similar to recent drilling levels in the area, no negative socioeconomic impacts are anticipated. Conversely, the Proposed Action would provide continued employment for some local residents in the oil and gas drilling and field services industry. Anticipated tax revenues associated with the Proposed Action would also be substantial. Thus, potential socioeconomic impacts associated with the Proposed Action are anticipated to be largely positive; negative impacts would not be significant according to thresholds used for this analysis.

2.13 Transportation

Transportation effects of the Proposed Action and alternatives would occur primarily on US Interstate 80 (I-80), Wyoming Highway 789 (WYO 789), and Carbon County Road 700 (Poison Buttes Road). These public roads provide access to the project area from nearby communities. Secondary transportation effects would occur on operator-maintained roads within the analysis area.

The increases in traffic associated with the Proposed Action and Alternatives A and B would create direct impacts when compared to the No Action Alternative. These impacts would occur steadily over the ten-year drilling program. Due to the condition and the excess capacity of the impacted highways, these impacts are not considered significant.

2.14 Health and Safety

Potential risks associated with the proposed action include the normal risks associated with traffic, construction activities, and drilling and production operations. In most instances, exposure to these hazards would be limited to the project-related workforce. Implementation of environmental protection and mitigation measures described in Chapters 2 and 4 would minimize the risk of exposure to these hazards. H_2S is not present within the South Baggs analysis area, and therefore, is not a safety concern for this area.

The Proposed Action and alternatives would not result in any substantial, increased risks to public health and safety; nor would it introduce any unusual occupational hazards or threats to the health and safety of oil and gas field workers.

2.15 Noise

A temporary increase in ambient noise levels in the vicinity of drilling and construction activities would be unavoidable. Workers on drilling rigs and heavy equipment would be exposed to the highest noise levels which would require hearing protection under Federal regulations. Noise from drilling activities generally would recede below the EPA standard of 55 dBA in 0.1 mile or less.

Construction-related impacts would be short-term, lasting as long as construction activities were ongoing at well sites, access roads, pipelines, and other ancillary facilities such as compressor sites. Noise would be created over a longer term at the individual well sites as a resulting of drilling activities.

Given the low human population densities in the South Baggs analysis area, construction and development operations under the Proposed Action and Alternatives A and B would be sufficiently distant from residences that none would likely be affected by construction or development operations. Overall noise produced by construction and support services equipment during peak activity periods would be moderate because of its dispersed and short-term nature.

Mitigation measures requiring the use of mufflers and other sound control measures at central compression facilities also would help to minimize the extent of this impact. No noise standards have been specified in affected leases and the project would be in compliance with RMP provisions related to noise.

3.0 SCOPE OF ANALYSIS

The purpose of the scoping process, as stipulated (40 CFR, Parts 1500-1508), is to identify important issues, concerns, and potential impacts that require analysis in the EIS and to eliminate insignificant issues and alternatives from detailed analysis. Public participation, consultation, and coordination have occurred throughout the planning process for this EIS through *Federal Register* notices, press releases, scoping meetings, individual contacts, and informal consultation. Contact dates and actions taken by BLM are summarized in Chapter 6 - Consultation and Coordination. All information received during the scoping process is available for review at the Rawlins District Office.

Also, during preparation of the DEIS, the BLM and consultant Interdisciplinary Team (IDT) have communicated with, and received input from various federal, state, county, and local agencies, elected representatives, environmental and citizen groups, industries, and individuals potentially concerned with issues regarding the proposed drilling action.

4.0 SUMMARY OF CUMULATIVE EFFECTS

Chapter 2, Section 2.6 of the DEIS provides a comparison of environmental impacts and a summary of the cumulative effects of the field development alternatives. In addition, a summary of impacts for each project alternative, including the No Action Alternative, and a comparison of the alternatives in terms of cumulative impacts has been provided as Table 2-4 of the DEIS.

Assuming the implementation of environmental protection and mitigation measures discussed in Chapters 2 and 4 of the DEIS, no cumulative impacts in excess of threshold criteria would occur except in the case of recreation and air quality resources.

Cumulative recreation impacts were found to be significant for Alternative B because the project, in combination with past and reasonably foreseeable activities, would result in the complete displacement of non-motorized recreation activities from the project area. The average well density proposed under Alternative B would be 4.7 wells per section. Well sites and facilities at this level of density would dominate the landscape. The impacts would be significant with no practical mitigation measures that would lower the impact below the level of significant.

The Proposed Action and project Alternative A would not result in significant cumulative impacts to local or regionally significant recreation and tourism resources or destinations. The Proposed Action and project alternatives would be in compliance with recreation management provisions of the RMP.

Potential cumulative recreation impacts associated with implementation of the No Action Alternative would be unknown until alternative activities and locations were proposed.

The air quality visibility impact analysis assumed a 1.0 deciview "just noticeable change" would be a "reasonably foreseeable significant adverse" impact, although there are no state or Federal regulatory visibility standards. Assuming project and other "reasonably foreseeable" natural gas compressors' NO_x emission rates of 2 g/hp-hr (which is possible, but greater than levels recently permitted by WDEQ-AQD), there is a potential for a "just noticeable change" cumulative visibility

impact (greater than a 1.0 deciview)on a single day at the mandatory Federal PSD Class I Rawah Wilderness Area (at 1.69 deciview). Direct project operations (under the Proposed Action or any Alterative, including "No Action") would not exceed this threshold alone.

Given the "reasonable, but conservative" nature of the cumulative air quality impact analysis (assuming all proposed wells would go into full production for the life of the project, all compressors operate continuously at the 2 g/hp-hr NO_x emission rate, etc.), it is unlikely that a "just noticeable change" would actually occur at the mandatory Federal PSD Class I Rawah Wilderness Area even on a single day due to the cumulative sources combined. (See Chapter 4, section 4.3 for the air quality impact analysis).

As described in Chapters 2 and 4 for the Proposed Action and project alternatives, implementation of reclamation, sediment and erosion control measures would be instrumental in minimizing cumulative impacts to soils, vegetation, water quality, range and forage for wildlife species.

While impacts associated with water quality, geologic hazards, minerals and paleontological resources would not be significant if mitigation and environmental protection measures incorporated into the Proposed Action and Alternatives A and B were adopted, potentially significant impacts could occur under the No Action Alternative if such protective measures were not adopted. The Proposed Action and Alternatives A and B generally would produce positive, cumulative socioeconomic impacts but would vary in the magnitude of impact. The No Action Alternative is likely to have less cumulative impact but the actual extent of that cumulative impact cannot be determined given the uncertain level of future activity under this alternative.

Overall, the Proposed Action and project alternatives (including the No Action Alternative) would increase long-term, cumulative impacts to the surface of the project area. Cumulative effects are both additive and interactive. Chapter 4 of the DEIS discusses these effects under each resource discipline section.

Existing disturbance within the South Baggs project area was determined to be 2.2 percent of the 12,352-acre project area or 275 acres comprised of 85 acres of roads (68 acres of improved gravel, 13 acres of unimproved dirt, and 4 acres of trails), 45 acres of pipelines, 62 acres of well sites, three acres of ancillary facilities (compressor site and meter station), and approximately 80 acres of uranium mining activity. Approximately 165 acres of the 275 acres are in various stages of revegetation, and the balance, 110 acres, are unvegetated. During the construction phase, the Proposed Action would add 293.9 acres of impact for a cumulative area of 403.9 acres or 3.3 percent of the project area. Alternative A would increase existing disturbance by 235.4 acres to 345.4 acres or 2.8 percent of the project area. Alternative B would produce 527.9 acres of new impact for a total of 637.9 acres, 5.2 percent of the project area. Under Alternative C, additional surface disturbance beyond the existing 110 acres would occur on a case-by-case basis. It is anticipated that such impact would be similar to Alternative A.

Impacts within the South Baggs project area would be reduced upon reclamation of pipeline ROWs and unused portions of the drill pads and roadway disturbances during the production phase for each alternative. Under the Proposed Action, reclamation would reduce impacts to 101.4 acres. This includes 70.0 acres for well pads (1.4 acre per pad) and 30.0 acres for roads (approximately 16.0 feet wide, or 0.6 acres per well), and 0.0 acres for pipelines. The compressor site and meter station

would not be reclaimed since the full size of the site would be needed during production. The cumulative impact for the Proposed Action would be 211.4 acres or 1.7 percent of the South Baggs project area. Alternative A impacts would decrease to 81.4 acres, with cumulative impacts affecting 191.4 acres or 1.5 percent of the South Baggs project area. Alternative B impacts would drop to 181.4 acres with cumulative impacts affecting 291.4 acres or 2.4 percent of the South Baggs project area.

The geographic area outside of the South Baggs project area considered in the cumulative impacts analysis (CIA) was defined following USDI-BLM (1994d) direction based on the USGS delineated watershed boundaries that the South Baggs project area covered or touched, an area approximately 44,544 acres in size. This area is shown in Chapter 4, Figure 4-1 of the DEIS. Existing disturbance in the CIA area was estimated from USGS topographic maps that were current for 1985 as well as relatively current BLM aerial photographs. Approximately 530 acres of disturbance was estimated for the CIA area not including the South Baggs project area (275 acres). In addition, a large portion of the CIA area, 17,870 acres, falls within the Creston/Blue Gap natural gas project area that is in various stages of development. Assuming two gas wells per section and the same length of roads and pipelines per well as assumed for this project, the Creston/Blue Gap project would likely add an additional 56 wells of disturbance or 300 acres of disturbance in the CIA area. Therefore, combined there would be approximately 1,105 acres of disturbance in the total CIA area, or 2.5 percent of the total CIA area. Impacts due to the Proposed Action would be approximately 294 acres. This combined with the other disturbance in the CIA and South Baggs areas would be approximately 1,399 acres or 3.1 percent of the combined area of 44,544 acres. However, a portion of this total disturbance (South Baggs and Creston/Blue Gap developments) would be reclaimed and only 110 acres of the 275 acres of existing disturbance in the project area is not revegetated and therefore long-term cumulative impacts would be approximately 529 acres or 1.2 percent of the CIA area. Total potential disturbance due to Alternatives A and B would be approximately 3.0 percent and 3.7 percent of the CIA area, respectively. Taking reclamation into consideration, total potential of temporary disturbance due to Alternatives A and B would be approximately 1.1 percent and 1.4 percent of the CIA area, respectively.

5.0 AGENCY-PREFERRED ALTERNATIVE

The Proposed Action is the BLM's Preferred Alternative for the South Baggs project area. The selection of the Proposed Action incorporates compliance with the Great Divide Resource Area Resource Management Plan (RMP) and implementation of various mitigation measures. Such measures include the following: (1) proponent-committed project-wide measures for preconstruction planning and design and specific resources, (2) BLM Standard Mitigation Guidelines (Appendix A, (3) Reclamation Guidelines (Appendix B), (4) Hazardous Materials Management Plan (Appendix C), and (5) additional mitigation measures recommended in Chapters 4 and 5 (Mitigation Summary of each resource element). The BLM has concluded that these detail a complete listing of practicable measures to reduce environmental harm resulting from the development and management in the South Baggs project area. The BLM also feels that the analyses demonstrate that the Proposed Action would meet the requirements of Federal Regulation 43 CFR 3162(a), which directs the Operators to conduct "....all operations in a manner which ensures the proper handling, measurement, disposition, and site security of leasehold production; which protects other natural resources and environmental quality; which protects life and property; and which results in maximum

ultimate economic recovery of oil and gas with minimum waste and with minimum adverse effect on ultimate recovery of other mineral resources."

Selection of the Proposed Action as the Agency-Preferred Alternative does not imply that this will be the BLM's final decision. Additional information acquired during the FEIS public comment period, and public and BLM internal review comments, may result in the selection of an Agency Preferred Alternative in the Record of Decision (ROD) that combines components of the Proposed Action and Alternatives A and B to provide the best mix of operational requirements and mitigation measures needed to reduce environmental harm.

SECTION 2:

ADDENDUM AND ERRATA

SECTION 2: ADDENDUM AND ERRATA

2.1 INTRODUCTION

The following sections have been prepared in response to public and agency review comments on the DEIS. The Addendum Section is to provide changes in the analysis described in the DEIS. Since there were no changes to the analysis provided in the DEIS, there will not be an Addendum Section. The Errata Section, Section 2.2 describes changes to the DEIS in response to public comments.

2.2 ERRATA

CHAPTER 1: PURPOSE AND NEED

1.2 Project Background

Page 1-3, paragraph 2, last sentence. Replace "Mesa Verde Formations" with "Mesaverde Formations".

Page 1-4, paragraph 7, first sentence. Replace "Mesa Verde Formations" with "Mesaverde Formations".

CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES

2.1.3.1 Completion and Testing Operations

Page 2-19, paragraph 2, first sentence. Replace "Mesa Verde Group" with "Mesaverde Group".

2.6.2 Summary of Cumulative Effects

Page 2-42, Table 2-4, column 3, paragraph 1, line 3. Replace "(at 1.68 deciview)" with "(at 1.69 deciview)"

Page 2-42, Table 2-4, column 3, paragraph 2, line 3. Replace "(at 1.68 deciview) and one day above Savage Run PSD Class II Wilderness Area background levels (at 0.67 deciview);" with "(at 1.69 deciview) and one day above Federal PSD Class II/Wyoming PSD Class I Savage Run Wilderness Area background levels (at 0.69 deciview);"

CHAPTER 3: AFFECTED ENVIRONMENT

3.2.2 Air Quality

Page 3-11, paragraph 2, line 2. Replace "Although the U.S. Environmental Protection Agency (EPA) recently revised both the ozone and particulate matter less than 2.5 microns in effective diameter (PM-2.5) Ambient Air Quality Standards, these revised limits will not be ..." with

"Although the U.S. Environmental Protection Agency (EPA) recently revised the particulate matter less than 2.5 microns in effective diameter (PM-2.5) National Ambient Air Quality Standards, the revised limits will not be ..."

Page 3-11, paragraph 3, line 8. Replace "including the Popo Agie and Savage Run wilderness areas," with "including the Popo Agie Wilderness Area,"

Page 3-11, paragraph 3, line 10. After the phrase "stringent incremental air quality limits apply." insert the following sentence that reads: "The Savage Run Wilderness Area is a Federal PSD Class II and State of Wyoming PSD Class I area."

Page 3-12, paragraph 2. After the second paragraph insert a new paragraph that reads: "There are no applicable hazardous air pollutant, visibility impairment, or atmospheric deposition (acid rain) standards; the visibility impairment regulations for both "reasonably attributable" and "regional haze" impacts apply only within mandatory Federal PSD Class I areas."

Page 3-13, Table 3-6, line 6. Replace the entire "ozone" item with:

"Ozone				
8-hour	117 c/	160	n/a	n/a"

Page 3-13, Table 3-6, footnote b/. Replace "b/ To supplement monitored NO2 data, a separate NO2 modeling analysis was performed, including many oxides of nitrogen (Nox) emission sources (BLM 1996)." with "b/ To supplement monitored NO_2 data, a separate NO_2 modeling analysis was performed, including many oxides of nitrogen (NO_x) emission sources (USDI-BLM 1996)."

3.3.2.1 General Soil Characteristics

Page 3-14, paragraph 4, line 6. Delete second reference to "Ustic Torriorthents".

Page 3-17, paragraph 3. Delete the third sentence: "Grah (1996) describes the results of the sample project in greater detail".

3.3.2.2 Site-Specific Soil Characterization

Page 3-17, paragraph 4. Delete the seventh sentence: " Detailed characterization of the soils based on the field sampling is presented in the Soils Technical Report (Grah 1996)".

3.5.1 General Vegetation

Page 3-34, paragraph 1, line 5. After ..."riverine and open water, and riparian scrub/forest", delete "...as described in detail in the Soils, Water Resources, and Vegetation Technical Report (Grah 1996)".

3.7.4 Big Game

Page 3-46, paragraph 3, third sentence. Change the sentence to read "The boundary for this herd unit corresponds with the Bitter Creek road on the west, Interstate 80 on the north, and the Wyoming/Colorado border on the south".

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.2.1 Introduction

Page 4-5, line 1. Insert the following:
"Potential direct and cumulative impacts to climate and air quality were analyzed as reported below. No significant, adverse impacts are anticipated from implementation of the Proposed Action or Alternatives."

4.2.1.2 Air Quality

Page 4-6, paragraph 4, line 3. Replace "An extensive air quality impact assessment document was prepared to analyze potential impacts from the South Baggs project and other "reasonably foreseeable" emission sources, and is available for review (TRC 1999)." with "An extensive revised air quality impact assessment document was prepared to analyze potential impacts from the South Baggs project and other "reasonably foreseeable" emission sources, and is available for review (USDI-BLM 1999b)."

4.2.3.3 Alternative B

Page 4-7, paragraph 2, line 4. Replace "(TRC 1999)." with "(USDI-BLM 1999b)."

Page 4-7, paragraph 4, line 2. Replace "natural gas would be burned (flared)" with "natural gas would typically be burned (flared)".

Page 4-8, paragraph 2, line 3. Replace "the second-maximum measured" with "the maximum measured"

Page 4-8, paragraph 4, line 4. Replace "(VOC) emissions to less than 38 tons per year" with "(VOC) emissions to less than 41 tons per year"

Page 4-9, paragraph 3, line 1. Replace "At the predicted ratio (5.2:1), the nomograph" with "At the predicted ratio (5.7:1), the nomograph"

Page 4-9, paragraph 3, line 4. Replace "Air Quality Standard of 235 $\mu g/m^3$." with "Air Quality Standard of 160 $\mu g/m^3$ (8-hour)."

Page 4-9, paragraph 3, line 6. After the phrase "rural Wyoming" insert the following: ", and it is unlikely the maximum 1-hour predicted ozone impact would occur for a consecutive 8-hour

period"

Page 4-9, paragraph 4, line 7. Replace "from individual wells and 100 m from the compressor station boundary." with "from individual wells and along the compressor station boundary."

Page 4-9, paragraph 6, line 2. Replace "to estimate the individual cancer risk at the nearest residence (500 m from a well site and 100 m from the compressor station)." with "to estimate the incremental cancer risk at the nearest residence (500 m from a well site and along the compressor station boundary)."

Page 4-9, paragraph 7, line 4. Replace "the individual cancer risks for benzene (0.6×10^{-6}), formaldehyde (0.8×10^{-6})," with "the individual cancer risks for benzene (0.7×10^{-6}), formaldehyde (0.7×10^{-6}),"

Page 4-9, paragraph 7, line 6. Replace "Therefore, the long-term cancer risk" with "Therefore, the long-term incremental cancer risk"

Page 4-10, Table 4-1. Replace the table contents with:

benzene	128.3	30_{FL07} - 714_{NV01}
toluene	118.6	$1{,}870_{IN03}$ - $8{,}930_{NV01}$
ethyl benzene	6.8	$4{,}340_{ND01}$ - $43{,}500_{VT01}$
xylene	161.8	$2{,}170_{IN01}$ - $10{,}000_{NV01}$
n-hexane	630.7	$1{,}800_{FL07}$ - $36{,}000_{CT01}$
formaldehyde	2.6	4.5_{FL07} - 71_{NV01}

Page 4-11, paragraph 4, line 2. Replace "examine potential project-wide air quality impacts." with "examine potential air pollutant emission source air quality impacts."

4.2.4 Impacts Summary

Page 4-11, paragraph 1, line 3. Replace "(TRC 1999)." with "(USDI-BLM 1999b)."

Page 4-11, paragraph 1, line 8. Replace "to be located at least 300 m from a well or 100 m from the compressor station)" with "to be located at least 500 m from a well or along the compressor station boundary)."

4.2.5 Cumulative Impacts

Page 4-11, paragraph 1, line 1. Replace "a separate air quality cumulative impact assessment (TRC 1999) was conducted" with "a separate revised air quality cumulative impact assessment (USDI-BLM 1999b) was conducted"

Page 4-11, paragraph 1, line 4. Replace "deposition (and their related impacts) at downwind PSD Class I wilderness area sensitive lakes; and 3) predict potential impacts to regional visibility in downwind PSD Class I wilderness areas." with "deposition (and their related impacts) in sensitive lakes; and 3) predict potential impacts to regional visibility."

ADDENDUM AND ERRATA

Page 4-12, paragraph 6, line 1. Replace "natural gas compressors' No_x emsiion rates" with "natural gas compressors' NO_x emission rates"

Page 4-12, paragraph 6, line 4. Replace "(at 1.68 deciview)" with "(at 1.69 deciview)"

Page 4-12, paragraph 6, line 4. Replace "Direst project operations" with "Direct project operations"

Page 4-13, paragraph 1, line 1. Replace "on a single day at both the PSD Class I Rawah Wilderness Area (1.68 deciview) and the PSD Class II Savage Run Wilderness Area (0.67 deciview)." with "on a single day at both the mandatory Federal PSD Class I Rawah Wilderness Area (1.69 deciview) and the Federal PSD Class II/Wyoming PSD Class I Savage Run Wilderness Area (0.69 deciview)."

Page 4-13, paragraph 2, line 6. Replace "continuously at the 2 g/hp-hr No_x emission rate" with "continuously at the 2 g/hp-hr NO_x emission rate"

Page 4-13, paragraph 3, line 2. Replace "examine potential project-wide air quality impacts" with "examine potential air pollutant emission source air quality impacts"

4.2.6 Mitigation Summary

Page 4-13, paragraph 1, line 1. Replace "**Mitigation**. Roads" with "**Mitigation (Additional Potential BLM-required Measures)**. Roads"

Page 4-13, second bullet, line 4. After the phrase "emission rate of 1-5 g/hp-hr." insert the following sentence: "The cost effectiveness of this control technology applied to a 2,500 to 4,000 hp rich-burn engine ranges from $315 to $395 per ton of NO_x removed."

Page 4-14, first bullet, line 4. After the phrase "emission rate of 1.5-4 g/hp-hr." insert the following sentence: "The cost effectiveness of this control technology applied to a 2,500 to 4,000 hp rich-burn engine ranges from $480 to $500 per ton of NO_x removed."

Page 4-14, second bullet, line 4. After the phrase "emission rate of 1-2.5 g/hp-hr." insert the following sentence: "The cost effectiveness of this control technology applied to a 2,500 to 4,000 hp rich-burn engine ranges from $700 to $890 per ton of NO_x removed."

Page 4-14, third bullet, line 5. After the phrase "coal-fired power plants)." insert the following sentence: "Using current industrial electrical rates and assuming 100% control due to elimination of 2 g/hp-hr NO_x emissions at the compressor site, the cost effectiveness of electric compression is roughly $26,000 per ton of compression NO_x removed."

Page 4-14, third bullet. After the third bullet insert the following fourth bullet: "<u>Fuel Cell Technology</u>. It is not currently feasible to connect enough fuel cells together to generate the compression horsepower necessary for the South Baggs project. Approximately 18 fuel cells (at a capital cost of nearly $4.5 million) would be required to provide 3,000 hp of compression. In addition, current technology allows only two fuel cells to be connected in a series, and as of

January 1998, there were only 160 of these units operating worldwide. The cost effectiveness of this control technology ranges from $20,000 to $40,000 per ton of NO_x removed."

Page 4-16 paragraph 2, line 1. Replace the sentence "The BLM, in cooperation with WDEQ-AQD, could continue to track total NO_x emissions." with "In addition to sources located within the Rock Springs Field Office area, the BLM, in cooperation with WDEQ-AQD, could track total NO_x emissions from additional South Baggs project sources located outside the Rock Springs Field Office area."

Page 4-16, paragraph 2. After the second paragraph insert the following paragraph: "Proposed South Baggs project NO_x emitting sources would be located outside the Rock Springs Field Office area. Therefore, either a mutually acceptable revision or a separate agreement would be required to track NO_x emission sources not subject to the current agreement."

4.2.7 Residual Impacts

Page 4-16, paragraph 1, line 2. Replace "quality impacts from the Proposed Action in addition" with "quality impacts from the South Baggs project in addition"

Page 4-16, paragraph 1, line 9. After the phrase "this air quality impact assessment." insert the following sentence: "Finally, the Southwest Wyoming Technical Air Forum is developing a secondary organic aerosol model, but it is not currently available for use."

CHAPTER 5: MITIGATION AND MONITORING

There were no changes to Chapter 5 text.

CHAPTER 6: CONSULTATION AND COORDINATION

6.2 List of Preparers

Page 6-4, Table 6-2. Add the following list of "stakeholders"

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ADDENDUM AND ERRATA

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James G. Zapert, Principal Consultant
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Robert Zimmer, Principal Environmental Scientist
Harding Lawson Associates
707 Seventeenth St., Suite 2400
Denver, CO 80202

REFERENCES CITED

Page R-1, reference 3, after the reference to Adamus (1983), insert:
"Air Resource Specialists, Inc. n.d. Standard Operating Procedures and Technical Instructions for Transmissometer Systems. Fort Collins, Colorado".

Page R-2, reference 13. delete the following reference:
"CDPHE-APCD, 1996. Background pollutant information on file at the Colorado Department of Public Health and Environment, Air Pollution Control Division. Denver, CO."

Page R-3, reference 6. Replace "Colorado Department of Public Health and Environment (CDPHE). 1996. Letter and accompanying data collected at Craig, Colorado, Ms. Nancy Chick, Environmental Protection Specialist, Air Pollution Control Division, February 8, 1996, Denver, CO." with "Colorado Department of Public Health and Environment, Air Pollution Control Division (CDPHE-APCD). 1996. Letter and accompanying data collected at Craig, Colorado, dated February 8, 1996. Ms. Nancy Chick, Environmental Protection Specialist. Denver, CO."

Page R-3, reference 7. delete the following reference:
"Colorado Department of Public Health and Environment, Air Pollution Control Division (CDPHE-APCD). 1996. Background pollutant information on file at the Colorado Department of Public Health and Environment, Air Pollution Control Division. Denver, CO."

Page R-4, reference 10, after the reference to Eaton (1978) insert:
"Environmental Protection Agency (EPA), 1979. Protecting Visibility - An EPA Report to Congress. EPA-450/5-79-008. Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina. October 1979."

Page R-4, reference 11. Replace "Environmental Protection Agency (EPA), 1988." with "_____. (EPA). 1988."

Page R-4, reference 15, after the reference to Environmental Protection Agency (1997b), insert:

"_____. (EPA). 1998. Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts. EPA-454/R-98-019. Office of Air Quality Planning and Standards, Research Triangle Park, NC. December 1998.

EPA. 1999. Visibility Monitoring Guidance. EPA-454/R-99-003. Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina. June 1999."

Page R-8, reference 6, after the reference to Labracherie (1996), insert:
"Landres, Peter and Shannon Meyer. 1998. A National Wilderness Preservation System Database: Key Attributes and Trends, 1964-1998. Gen. Tech. Rep. INT-GTR-18. http://www.wilderness.net/nwps/db/ USDA-Forest Service, Rocky Mountain Research Station. Odgen, Utah."

Page R-9, reference 13, after the reference to Mosher (1981), insert:
"National Acid Precipitation Assessment Program (NAPAP). 1991. Acid Deposition: State of Science and Technology: Report 24 - Visibility: Existing and Historical Conditions - Causes and Effects. Office of the Director, Washington, DC."

Page R-9, reference 14, verify the reference NOAA (1985) is used in the text. If not, delete.

Page R-9, reference 13, after the reference to NOAA (1985), if kept, insert:
"National Park Service. 1999. Federal Land Managers' Air Quality Related Values Workgroup (FLAG): Draft Phase I Report. Air Quality Division. Denver, Colorado. May 4, 1999."

Page R-10, reference 3, after the reference to Oakleaf (1982), insert:
"Olson, Dan. 1998. Memorandum to Joe Scire, Earth Tech, Inc. regarding the release of SWWYTAF MM5 data to the BLM dated December 15, 1998. State of Wyoming, Department of Environmental Quality, Air Quality Division. Cheyenne, Wyoming."

Page R-12, reference 14, delete the following reference:
"TRC, 1999. Air Quality Impact Assessment Technical Support Document, Continental Divide/Wamsutter II and South Baggs Natural Gas Development Projects, Environmental Impact Statement. Prepared for the U.S. Department of the Interior, Bureau of Land Management, Rawlins Field Office, by TRC Environmental Corporation and Earth Tech, Incorporated. Windsor, CT."

Page R-12, reference 15, delete the following reference:
"Trewartha, G. 1968. An introduction to climate. McGraw-Hill Book Company, New York, NY. 408 pp."

Page R-13, reference 2, after the reference to USDA-FS (1980), insert:
"U.S. Department of Agriculture - Natural Resource Conservation Service (USDA-NRCS). 1998. PRISM Data Set (Available on compact disk or at http://www.ftw.nrcs.usda.gov/prism /prism.html). Natural Resources Conservation Service, National Water and Climate Center, Portland, Oregon".

ADDENDUM AND ERRATA

Page R-14, reference 12, after the reference to USDI-BLM (1996), insert:
"_____. (USDI-BLM). 1998. Final Air Quality Impact Assessment Protocol - Continental Divide/Greater Wamsutter II and South Baggs Projects. U.S. Department of the Interior, Bureau of Land Management, Rawlins District Office. Rawlins, Wyoming. September 28, 1998.

_____. (USDI-BLM). 1999a. Air Quality Impact Assessment Technical Support Document, Continental Divide/Wamsutter II and South Baggs Projects. U.S. Department of the Interior, Bureau of Land Management, Rawlins and Rock Springs Field Offices. Rawlins and Rock Springs, Wyoming. April 1999.

_____. (USDI-BLM). 1999b. Revised Air Quality Impact Assessment Technical Support Document, Continental Divide/Wamsutter II and South Baggs Projects. U.S. Department of the Interior, Bureau of Land Management, Rawlins and Rock Springs Field Offices. Rawlins and Rock Springs, Wyoming. September 1999

_____. (USDI-BLM). 1999c. Pinedale Anticline Oil and Gas Exploration and Development Project: Air Quality Assessment Protocol. Pinedale Field Office. Pinedale, Wyoming. June 1999."

Page R-15, reference 8, after the reference to Volger (1996), insert:
"Watson, John G. *et al.* 1996. Mt. Zirkel Wilderness Area: Reasonable Attribution Study of Visibility Impairment. Prepared for the Technical Steering Committee, c/o Colorado Department of Public Health and Environment, Air Pollution Control Division, Denver, Colorado, by the Desert Research Institute, Reno, Nevada. July 1, 1996".

GLOSSARY

Page G-3, glossary item 10 [Class(es)]. Delete all references to "airsheds," "Airshed Classes," and the entire "Wind Speed and Stability Class Distributions" table.

Page G-11, glossary item 10 [particulates]. Replace "particulates: Small particles in the air and generally considered pollutants." with "particulate matter: fine solid or liquid particles in the air (or emitted from an air pollution source), including dust, smoke, fumes, spray and fog. Particulate matter is typically measured and regulated based on the effective diameter of the particles: Total Suspended Particulates (TSP) are all particles less than about 70 microns; fine particles (PM-10) are all particles less than about 10 microns; and inhalable particles (PM-2.5) are all particles less than about 2.5 microns."

Page G-12, glossary item 4 [prevention of significant deterioration (PSD)], line 1. Replace "under the Clean Air Act (P.L. 84-159, as amended)" with "under the Clean Air Act (as amended)"

APPENDIX A: STANDARD MITIGATION GUIDELINES

There were no changes to Appendix A text.

APPENDIX B: RECLAMATION RECOMMENDATIONS

There were no changes to Appendix B text.

APPENDIX C: HAZARDOUS MATERIALS MANAGEMENT PLAN

There were no changes to Appendix C text.

APPENDIX D: AIR QUALITY - CUMULATIVE IMPACTS ANALYSIS

Page D-1, paragraph 1, line 1. Replace "Based on a separate assessment predicting potential future far-field (cumulative) air quality impacts (TRC 1999)," with "Based on a separate revised assessment predicting potential future far-field (cumulative) air quality impacts (USDI-BLM 1999b),"

Page D-1, paragraph 1, line 4. Replace "determine if the PSD Class I NO_2 increment" with "determine if the PSD Class I and II NO_2 increments"

Page D-2, Table D-1. Replace the entire Table with the following:

"Table D-1 Predicted Direct Project NO_2 PSD Class I and II Sensitive Receptor Impacts ($\mu g/m^3$).

Location	Direct Project Sources	Annual PSD Increment
PSD Class I Sensitive Areas		
Bridger Wilderness	0.001	2.5
Fitzpatrick Wilderness	<0.001	2.5
Mount Zirkel Wilderness	0.01	2.5
Rawah Wilderness	0.005	2.5
PSD Class II Sensitive Areas		
Adjacent to CD/WII Projects	21.2	25
Adjacent to South Baggs Project	1.8	25
Dinosaur National Monument	0.009	25
Popo Agie Wilderness	0.001	25
Wind River Roadless Area	<0.001	25
Federal PSD Class II/Wyoming PSD Class I Sensitive Area		
Savage Run Wilderness Area	0.008	25/2.5

ADDENDUM AND ERRATA

Page D-3, Table D-2. Replace the entire Table with the following:

"Table D-2 Predicted Change in Acid Neutralizing Capacity in PSD Class I and II Area Sensitive Lakes (percent change).

Location	Minimum ANC (μeq/l)	Project Sources	Cumulative Sources	Thresholds
PSD Class I Sensitive Areas				
Bridger Wilderness				
Deep Lake (2.7-year turnover)	49.0	0.1	1.4	10
Mount Zirkel Wilderness				
Pothole A-8	14.2	0.3	1.5	7.0 g/
Seven Lakes	30.0	0.2	1.0	10
Upper Slide Lake	22.6	0.2	1.0	4.4 g/
Rawah Wilderness				
Island Lake	64.6	<0.1	0.4	10
No. 4 Lake	43.5	0.1	0.6	10
PSD Class II Sensitive Areas				
Medicine Bow National Forest				
West Glacier Lake	29.7	0.4	4.6	10
Popo Agie Wilderness				
Lower Saddlebag Lake	58.3	<0.1	0.5	10

g/ For lakes with minimum existing ANC values <25 μeq/l, the threshold of concern is less than a 1 μeq/l reduction below the minimum existing ANC value (e.g.; for Pothole A-8 in the PSD Class I Mount Zirkel Wilderness Area, 0.070 x 14.2 μeq/l equals 1 μeq/l)."

ADDENDUM AND ERRATA

Page D-4, Table D-3. Replace the entire Table with the following:

"Table D-3 Predicted Visibility Impacts in PSD Class I and II Sensitive Areas (number of days above a "just noticeable change" of 1.0 deciview).

Location	Direct Project Sources a/	"No Action" Sources	Total Cumulative Sources
PSD Class I Sensitive Areas			
Bridger Wilderness	0	0	0
Fitzpatrick Wilderness	0	0	0
Mount Zirkel Wilderness	0	0	0
Rawah Wilderness	0	0	1 b/
PSD Class II Sensitive Areas			
Dinosaur National Monument	0	0	0
Popo Agie Wilderness	0	0	0
Wind River Roadless Area	0	0	0
Federal PSD Class II/Wyoming PSD Class I Sensitive Area			
Savage Run Wilderness Area	0	0	0

a/ Direct Project Sources include the Continental Divide, Wamsutter II and South Baggs projects.

b/ All cumulative sources combined were predicted to cause a 1.69 deciview change at the mandatory Federal PSD Class I Rawah Wilderness Area boundary on a single day (based on June 4, 1995, meteorology and Rocky Mountain National Park IMPROVE optical data). However, this predicted visibility impact may be an artifact of the modeling analysis, where distant hourly optical conditions are assumed to occur simultaneously in each sensitive receptor."

Page D-4, paragraph 2, line 5. Replace "on a single day at both the PSD Class I Rawah Wilderness Area (1.68 deciview) and the PSD Class II Savage Run Wilderness Area (0.67 deciview)." with "on a single day at both the mandatory Federal PSD Class I Rawah Wilderness Area (1.69 deciview) and the Federal PSD Class II/Wyoming PSD Class I Savage Run Wilderness Area (0.69 deciview)."

Page D-5, bullet 1, line 3. Replace "Recently, NO_x emissions from existing sources in southwestern Wyoming have been decreasing." with "A reduction of NO_x emissions from existing sources in southwestern Wyoming is anticipated, primarily due to installation of control devices on the Naughton coal-fired electrical generation facility."

Page D-6, bullet 1, line 3. Replace "A similar conclusion has been reached by the Southwest Wyoming Technical Air Forum." with "The Southwest Wyoming Technical Air Forum is developing a secondary organic aerosol model, but it is not currently available for use."

Page D-6, paragraph 2, line 2. Replace "examine potential project-wide air quality impacts" with "examine potential air pollutant emission source air quality impacts"

APPENDIX E: U.S. FISH AND WILDLIFE SERVICE LETTERS

There were no changes to Appendix E text.

APPENDIX F: WILDLIFE

There were no changes to Appendix F text.

SECTION 3:

CONSULTATION AND COORDINATION

SECTION 3: CONSULTATION AND COORDINATION

3.1 SCOPING PROCESS

The BLM published a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) in the Federal Register on January 23, 1996.

A Scoping Notice was prepared and submitted to the public by the BLM on February 1, 1996, requesting input into the proposed South Baggs Area Natural Gas Development project. Scoping documents were sent out to the public listed on the BLM mailing list, as well as organizations, groups, and individuals requesting a copy of the scoping document. The Scoping Notice explained the scope of the Merit Energy South Baggs natural gas development Proposed Action and requested comments concerning the level of analysis included in the DEIS.

There were 29 written responses received during the scoping period in response to this project. These written responses consisted of 13 letters in favor of the drilling proposal and 16 letters that did not state a position in regard to the project but provided suggested mitigation if the project were implemented. There were no letters that specifically stated the project should not be implemented. The issues and concerns identified by the public during the scoping period are summarized in Chapter 1 of the DEIS.

During preparation of the EIS, the BLM and the consultant interdisciplinary team (IDT) have communicated with, and received or solicited input from various federal, State, county, and local agencies, elected representatives, environmental and citizens groups, industries, and individuals potentially concerned with issues regarding the proposed drilling action. The contacts made are summarized in the following sections.

3.2 DRAFT EIS CONSULTATION AND COORDINATION

The BLM consulted with the Department of Interior U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department on issues, impacts and mitigation for Mountain Plover, Black-footed Ferret, and other wildlife populations and habitats; and consulted with the Department of Environmental Protection Agency, the U.S. Forest Service and Wyoming Department of Environmental Quality on issues, impacts and mitigation for air quality. The BLM has also consulted and coordinated with local, state, and county government officials. Native American Indian tribes were provided notices of the proposed project.

3.3 PUBLIC REVIEW OF DRAFT EIS

The Environmental Protection Agency's Notice of Availability was published in the *Federal Register* on May 21, 1999. Over 250 copies of the draft EIS were made available to the public and interested agencies for a 60-day public comment period. The date by which the comments had to be received was July 13, 1999. The public was invited to provide written comments on the draft EIS.

SECTION 3: CONSULTATION AND COORDINATION

One press release was prepared announcing the availability of the Draft EIS. Press releases were printed in the Rawlins Daily Times on May 28, 1999; the Laramie Boomerang on June 1, 1999; and the Casper Tribune on June 17, 1999.

A public meeting was conducted by the BLM on June 22, 1999 at the Rawlins Field Office in Rawlins, Wyoming. The meeting was attended by 5 persons, of that, no attendees gave public statements.

All of the comments received during the public comment period and during the public meeting have been considered in the preparation of the final EIS. Responses to all the comments expressed during the public meeting can be found in Section 5 entitled *Response to Public Comments on the Draft EIS*

3.4 DRAFT EIS COMMENTS

A total of 13 comment letters were received on the draft EIS. Responses to public comments received on the draft EIS are included in this final EIS. In many cases respondents submitted virtually identical comments. Rather than repeating a response, the reader may be referred to an earlier response. Reference to a previous response in no way reflects upon the value of the comment. The comment letters and responses to the comments are contained in Section 5 entitled *Response Comments* following the reprinted letters. Comments are numbered sequentially within a letter and correspond to the numbered response.

Specific changes in the text of the draft EIS are found in Section 2 of the final EIS. Where a response to a comment indicates "see Errata", Section 2 of the final EIS should be consulted for the specific rewording or clarification of the text.

3.5 COMMON CONCERNS

Respondents shared several common concerns about the proposed drilling project. The concerns were: technical approach used in the air quality analysis; concerns with recreation and wildlife management; alternatives to the proposed action; cumulative effects of the proposed action and alternatives; and general questions on the environmental analysis process used for preparing an Environmental Impact Statement.

SECTION 4:

COMMENT LETTERS RECEIVED ON THE DRAFT EIS

SECTION 4: COMMENT LETTERS RECEIVED ON THE DRAFT EIS

4.1 INTRODUCTION

The following comment letters were submitted by the public and interested agencies on the South Baggs Natural Gas Development Draft EIS. The 60-day comment period was May 14, 1999 through July 13, 1999.

A total of 13 comment letters were submitted during this time. The comment letters are reproduced in this section. Each letter is given a unique identifying number. Substantive comments requiring a response are identified by comment number associated with heavy vertical lines in the margin of each letter. For instance, comment No. 1-1 is the first comment on comment letter no. 1 requiring a response. All responses are presented in the following Section 5. Each response identifies the letter and comment number that it is associated with.

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COMMENT LETTERS RECEIVED ON THE DRAFT EIS

[redacted]

RECEIVED

[redacted]

May 13, 1999

Wyoming Regulatory Office
2232 Dell Range Blvd., Suite 210
Cheyenne, Wyoming 82009

Mr. Larry Jackson
Bureau of Land Management
Rawlins Field Office
1300 North Third Street
Rawlins, Wyoming 82301

Dear Mr. Jackson:

This is in reference to your agency's April 20, 1999 request for comments on the Draft Environmental Impact Statement for the South Baggs Area Natural Gas Development Project Carbon County, Wyoming. Thank you for the opportunity to comment.

1-1 The Corps of Engineers regulates the discharge of dredged and fill material into waters of the United States, including wetlands, as authorized primarily by section 404 of the Clean Water Act (33 U.S.C. 1344). Comments will be focused on this sole issue. Specifically, page 3-37, line 13 states that a large wet meadow areas located along the Little Snake River are not jurisdictional for the purposes of Section 404 of the Clean Water Act (Act). The Corps of Engineers and the U.S. Environmental Protection Agency are responsible for making jurisdictional determinations for the purposes of Section 404 of the Act. This office has not made any determinations concerning the referenced wetlands. Please be aware that site specific field data is needed to support that determination. If the Bureau of Land Management (BLM) desires a jurisdictional determination concerning these areas, then it is recommended that you contact this office for assistance in identifying specific information and data collection protocols to determine if the wet meadow areas are considered to be jurisdictional for the purposes of Section 404 of the Act. It is recommended that the language pertaining to jurisdiction be removed.

1-2 As you are aware, we are in the process of establishing a general permit (General Permit 99-00) which will allow a number of activities associated with gas development to occur in waters of the United States, including wetlands. Entities proposing to conduct gas development activities in the South Baggs area should be able to use this permit with BLM's assistance once it becomes established. However, they need to ensure they are in compliance with the requirements of the permit, including in many cases, submittal of a compliance certification form.

If you have any questions regarding this matter, please contact Chandler Peter at (307) 772-2300. Be sure to reference file number 199060039.

Sincerely,

for Chandler Peter
Matthew A. Gilmore
Program Manager
Wyoming Regulatory Office

Wildlife Management Institute

[redacted]

[redacted]

June 25, 1999

RECEIVED

[redacted]

Larry Jackson, Project Coordinator
Rawlins Field Office, BLM
P.O. Box 2407
Rawlins, WY 82301-2407

Dear Mr. Jackson:

I am the Southwest Field Representative for the Wildlife Management Institute. The Institute is a private, nonprofit, scientific and educational organization founded in 1911 and dedicated to the restoration, conservation, and sound management of natural resources, especially wildlife, in North America. I have the following comments on the DEIS for the South Baggs Area Natural Gas Development Project in Carbon County, Wyoming.

2-1 The Institute is keenly interested in oil and gas development on public lands in Wyoming. We have participated in many previous NEPA processes dealing with this topic. Our primary concern with review of a single project is the problem of inadequately considering the cumulative impacts of this project along with all the other energy development proposals (active and planned) in southwest Wyoming. We note the discussion in the Executive Summary on cumulative effects where it is stated that "assuming the implementation of environmental protection and mitigation measures discussed in Chapters 2 and 4 of the DEIS, no cumulative impacts to areas of threatened wildlife would occur except in the case of recreation and air quality resources." How much development could occur in this area before the same conclusion would be reached for resources like wildlife species and their habitat?

2-2 Our point is that in the future (probably not distant), there will be another proposal for this area and it will be evaluated separately from all others both planned and implemented. At some time, the BLM must recognize and declare that industrialization of southwest Wyoming has reached a point where further development on public lands WILL in some significant cumulative cognizes

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South Baggs Natural Gas DEIS 2

impacts on a variety of resources and that additional leases for large energy projects on federal lands will not be permitted.

2-2 The Institute is concerned about the impacts this project will have on quality of outdoor recreation in this area, especially big game hunting. This area is an important big game hunting area. Big game hunting is an important economic benefit to local communities in the project area. The information that the South Baggs project could cause major alterations (page 4-61) to the recreation setting and recreation opportunities available to persons using the area is troubling. The DEIS acknowledged that the presence of construction and drilling equipment and associated increased evidence of human industrial activities in the area could (would ?) detract from the recreational experiences. Combining this with the prediction of how the project will impact wheel recreation (page 4-241) prompt us to urge decision makers to seriously consider if this is the future desired condition that these public lands should be depended on.

2-3 The DEIS calculates alternative on monitoring activities. These activities should be more clearly identified. Monitoring is a critical element of the DEIS process and should be designed to detect detrimental impacts. Considering the impacts expected on outdoor recreation we suggest that monitoring of the impact of this project on the quality of the outdoor experiences for hunting should be done.

2-4 We are also concerned about the methodology used to calculate the "year round carrying capacity" for big game animals in the project area. Having spent a number of years conducting research on big game range carrying capacity I am very familiar with this topic. The approach used to get the animal density per area is essentially logical. Dividing the herd unit population objective by the total crucial winter range is not a viable way to determine carrying capacity.

2-5 First, all the areas involved in the animal winter range total are not equal nor all useful to big game animals. In fact, in many cases a small percentage of the area contributes most of the feeding resources needed by big game animals. An animal integration summary is a very uneven energy across its home range. Therefore, the calculation made in the DEIS of number of animals likely to be lost due to the project is misleading. The impact will be which areas are impacted at which time period. There is no way that this methodology would stand the test of scientific scrutiny and it should not be part of the analysis in the DEIS. The point is that the number of surface acres lost per se is NOT the factor most important in determining the impact on a population of big game animals. This might be true if all of the lost acres were in one small block and there were no roads, pipelines, pump stations etc. accompanying the lost acres. We urge the BLM to drop this unfortunate approach to carrying capacity and admit that given the knowledge existing for this population, that impact to big game animals is largely unknown.

2-6 Considering the proliferation of energy projects across southwest Wyoming with their accumulated cumulative impacts to a wide variety of resources, and given that this project will be approved, it seems that the only prudent alternative would be the minimum density of well alternatives (Alternative A). It is probable and should be expected that in a few years the request

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4-1 [illegible]

4-2 [illegible]

[illegible]

3-1 [illegible]

[illegible]

[illegible]

4-3 [illegible]

4-4 [illegible]

4-5 [illegible]

4-6 [illegible]

4-7 [illegible]

COMMENT LETTERS RECEIVED ON THE DRAFT EIS

Mr. Larry Jackson

Sage Grouse

4-8 According to page 3-92 of the DEIS, "...good grouse habitat is in close supply throughout most of the project area." The above statement contradicts section 3.5.1 of the DEIS which states that 75 percent of the project area is covered by mixed desert shrub and "this cover type exhibits three phases including: (1) areas dominated by sagebrush (Artemisia spp.)..." The importance of sagebrush and associated riparian areas to endemic sage grouse populations is well-documented (Wyoming Game and Fish Department Information, WGFD, 1999). This contradiction needs to be rectified and the potential impacts of this project on sage grouse should be fully discussed.

4-9 Not all sage grouse nest within 2 miles of known leks (Connelly et al. 1988), nor are broods restricted to this 2 mile perimeter. Therefore, given the presence of sagebrush habitat and riparian areas within the project area, sage grouse maybe using the area. Surveys conducted were for determination of sage grouse presence in the winter and early spring only. These surveys do not adequately assess the use of this area by nesting hens or broods.

Bald Eagle

4-10 Due to the lack of concurrence and reported sightings in and around the project area, we agree that the project will not have adverse impacts on the bald eagle.

Water Depletions to the Colorado River System

4-11 The information provided in the DEIS indicates a potential depletion from the proposed project to the Colorado River. Page 4-31 indicates that there is a slight chance that water would be obtained from surface sources such as the Bushy River. On page 3-64, the DEIS confirms the above statement by stating that depletion of surface water on the project is not anticipated. The source, amount, and/or timing of water use have not been specifically identified by Merit (page 4-30). Considering that the source of water has not been identified, the Service believes that effects of ground water withdrawals on surface waters such as the Bushy River are possible. A definitive determination on the depletion issue is necessary to determine if consultation on the effects of such depletions on listed Colorado River fish will be necessary.

Riparian/Wetlands

4-12 Riparian or streamside areas are a valuable natural resource and impacts to these areas should be avoided whenever possible. Riparian areas are the single most productive wildlife habitat type in North America. They support a greater variety of wildlife than any other habitat. Riparian vegetation plays an important role in protecting streams, reducing erosion and sedimentation as well as improving water quality, replenishing the water table, controlling flooding, and providing shade and cover. In view of their importance and relative scarcity, impacts to riparian areas should be avoided. According to page 4-30, impacts to wetlands will be generated or avoided by use of the SMP and 404 permitting process. However, the purpose of a Section 404 permit is for the filling of waters of the United States. Therefore, disturbance of a wetland will not be avoided or prevented by a Section 404 permit. If the intention of the above statement was to imply mitigation would compensate for wetland impacts this should be clarified. In addition, mitigation plans should be incorporated in the Final Environmental Impact Statement (FEIS), so that they

Mr. Larry Jackson

4-12 are be evaluated for their effectiveness in restoring wetland function. Page 4-37 of the DEIS states that road and pipeline facilities will affect an estimated 5 acres of wetlands. The Service agrees with the DEIS on page 4-42 that if wetlands are impacted, implementation of compensatory mitigation (the Service recommends a 1.5:1 mitigation ratio) prior to project construction will reduce the significance of impacts.

4-13 Page 4-39 also states that revegetation would involve plans consistent that meet specific reclamation objectives. Plant material used for reclamation objectives should be listed in the FEIS. Revegetation of disturbed areas should return the area to the original native vegetation community.

Cumulative Impacts

4-14 The Service does not believe that the DEIS fully discusses the cumulative impacts for the proposed project area. The DEIS states that incremental increases in cumulative impacts due to the project are negligible for the black-footed ferret, prairie falcon and mountain plover. Furthermore, the DEIS states that raptors and migratory birds only have a likelihood of being affected incrementally. The DEIS does not discuss differential habitat quality of these increments, nor whether the losses anticipated from this project are contributing to high quality habitat loss, incremental losses of wildlife habitat due to the proposed project and in the surrounding project area (i.e. The Greater Wamsutter II, Continental Divide, Michigan Dome, South Baggs, Brady Field, various coal mines, Shipping Rock, and Parish Draw) and the quality of habitat lost need to be discussed as a whole. The DEIS does not offer any supporting information that suitable habitat for wildlife species is available in areas surrounding the project area. Moreover, the DEIS should provide data demonstrating that the surrounding areas are not at carrying capacity for the species displaced by the proposed project.

Summary Comments

4-15 In conclusion, the Service concurs that the proposed project is not likely to adversely affect the whooping crane or the wolf fish. With present survey guidelines that were used in the DEIS, the Service does not concur that the project will have no adverse effects to the mountain plover or the black-footed ferret. Additionally, surveys for sage grouse should adequately assess the use of the project area by nesting hens and broods. Until traffic counts have been changed for raptors, specifically bald eagle, peregrine falcon, and ferruginous hawk, we will be unable to concur with the determination that no adverse effects to the bald eagle and other raptors would be expected. Considering the possible depletions from the Bushy River, a definitive determination on the depletion issue is necessary to determine if consultation on the effects of such depletions on listed Colorado River fish will be necessary.

Thank you for providing this draft document so that we can improve the consultation process for this and future projects. If you have any questions, please contact Joey Williams of my staff at the letterhead address or phone (307) 775-2374, extension 34.

cc: Director, WGFD, Cheyenne, WY
Nongame coordinator, WGFD, Lander, WY

Office of Federal Land Policy

July 9, 1999

RECEIVED
JUL 13 1999

Larry Jackson, Team Leader
BLM, Rawlins Field Office
1300 North Third Street
Rawlins, WY 82301

Re: South Baggs Area, Natural Gas Development Project, Draft Environmental Impact Statement (DEIS)

Dear Mr. Jackson:

This Office has reviewed the referenced document on behalf of the State of Wyoming. We also provided the DEIS to all affected State agencies for their review, in accordance with State Clearinghouse procedures.

The State of Wyoming supports the proposed action. Timely and responsible development of our mineral resources is an important part of Wyoming's economic base.

5-1 We wish to highlight the fact that the Air Quality Technical Support Document Volume II referenced the Southwest Wyoming Industrial Air Pollution (SWWYIAP) information and modeling analysis. This information and modeling have not been finalized, nor has the Wyoming Department of Environmental Quality authorized the release of such information for use in the South Baggs Area EIS. Either this document is incorrect or the information has been inappropriately utilized.

5-2 Also, the Game and Fish Department commented that there has been little communication from BLM and Merit throughout the development of this project. Given the importance of the winter range complex, the State urges BLM to coordinate closely with the Game and Fish Department to address their concerns and to insure that appropriate mitigation and reclamation plans are incorporated into the FEIS.

5-3 Among comments from the State Geological Survey, is the fact that there are modern and abandoned coal mines present in the area. Their exposure is a possibility and care should be taken to address this issue.

5-4 Enclosed you will find the referenced letters from the Wyoming Game and Fish Department, the State Department of Environmental Quality's Air Quality Division and the State Geological Survey, as well as letters from the State Historic Preservation Officer and the State Engineer's Office. These agencies have provided comments or information pertinent to the DEIS for your use in preparing the Final EIS as expectantly as possible. Please give these comments every consideration.

This Office will send eight copies of these letterhead and documents regarding this project for distribution to affected State agencies. Setting Memorandum of Understanding and other working agreements with individual agencies needs to plan and coordinated.

The State of Wyoming appreciates the opportunity to comment.

Sincerely,

Gerald Lee
Director

C.P.
Governor Sullivan

WYOMING STATE GEOLOGICAL SURVEY

June 10, 1999

MEMORANDUM

To: Julie Hamilton, Wyoming State Clearinghouse

From: Lance Cook, P.G., State Geologist

Re: Draft EIS South Baggs Natural Gas Development Project DEIS (State Identifier # 99-207)

6-1 On pages 1-3, 1-4, and 3-19 the Mesa Verde Formation or Group should be Mesaverde Formation or Group. This mistake may appear in other spots as well. On page 3-20, expected reserves are given for each formation in cubic feet per day. This has no meaning. Reserves are expressed in volumes expected to be produced, such as one billion cubic feet, over the life of the well, not as a daily rate.

6-2 The Draft EIS recognizes that there are uranium resources in the area. If any of these wells encounter a gamma anomaly, please notify the WSGS, Industrial Minerals and Uranium Section. If emissions is present at the levels indicated in the Draft EIS, then the site and workers should be monitored to ensure that they are not exposed to dangerous levels of radiation. In addition, some of the highest concentrations of uranium discovered in the United States are present in the area. The WSGS has correspondence that indicates that radiation concentrations could be as high as 3% in some areas. Radiation concentrations at this level are toxic. Care should be exercised to ensure that workers or wildlife are not exposed to toxic concentrations of uranium.

6-3 The WSGS has recently generated a current analysis of coalability and coalmine potential of the area. A copy of the report can be supplied. The analysis in the Draft EIS is somewhat out of date.

If there are questions on our comments, please direct them to the appropriate geologist on my staff or to me. Rod De Bruin is our uranium geologist, Ray Harris is our expert on uranium, and Jim Case handles hazards.

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COMMENT LETTERS RECEIVED ON THE DRAFT EIS

WYOMING
GAME AND FISH DEPARTMENT

"Conserving Wildlife — Serving People"

June 30, 1999

WEB 8191
Bureau of Land Management
Rawlins Field Office
Draft Environmental Impact Statement
South Baggs Natural Gas Development Project
State Identifier Number: 98-009
Carbon County

Wyoming State Clearinghouse
Office of Federal Land Policy
ATTN: Julie Hamilton
Herschler Building, 3SW
Cheyenne, WY 82002

Dear Ms. Hamilton:

The staff of the Wyoming Game and Fish Department has reviewed the Draft Environmental Impact Statement for the South Baggs Natural Gas Development Project on the Rawlins Field Office. We offer the following comments.

Operators propose to drill and develop approximately 20 well locations over the next 10 years, creating about 294 acres of direct site disturbance from the well pads, compressor stations, roads, and pipelines. This proposed project falls within crucial winter range for the Baggs Mule Deer herd and the Sierra Creek Antelope herd.

7-1 We are very disappointed in the lack of communication from the Bureau and industry as this project was developed. The project has been under consideration for several years, and yet we have had very little opportunity for input until now. This project was outlined during the Green River Basin Advisory Council process as one to receive early and meaningful involvement, in order to avoid conflicts during the permitting phase. This involvement did not occur until now, when the draft of the Environmental Impact Statement has already been prepared and is being reviewed. We assume that our concerns at this point will affect planning, identification of issues and concerns, and development of alternatives to the same degree as if they had been more properly incorporated in earlier phases of this project.

7-2 Although the Environmental Impact Statement calls for an additional 20 wells in the area, we are very skeptical of this projected level of development. We have not reviewed a gas

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Ms. Julie Hamilton
June 30, 1999
Page 2 - WEB 8191

7-2 field in Southwest Wyoming in the last 7 years that has not exceeded its original claw estimate, as predicted in the original environmental documents. We encourage the Bureau to include an alternative and analysis of the broadest foreseeable field development, so that a more adequate consideration of issues, impacts, and alternatives can be made.

7-3 In the Bureau's 1990 Green Divide Resource Management Plan, on page 45, it is stated, "Crucial winter ranges for all big game species will be protected." We interpret this to mean that development can only occur if winter range is protected. The Environmental Impact Statement estimates the impacts of this project will result in a reduction of 99.4 acres of crucial winter range after reclamation. Direct losses to big game are estimated to affect only 7 deer and 13 antelope, although 294 acres will be disturbed over the 10-year construction period. This estimate of impact is based on the hard or objective and the total amount of winter range delineated on mapped overlays. It does not take into account any impacts from additional roads or disturbance on the winter range. We believe this to be a misinterpretation of the potential impacts to big game in this area.

7-4 Some areas of crucial winter range contain higher densities of deer in different years. During the winter of 1996-97, we documented 1,117 deer in and around the project area between January and March (see Wyoming Game and Fish Department, 1996 Baggs Deer Job Completion Report). Maximum mule deer densities during February 1997 were estimated in some areas at 82 deer within 130 acres (0.63 deer/acre), which could result in the current loss of winter habitat for 201 deer if 294 acres are lost. This would be a very significant economic loss associated with the value of these animals to the State. Also, since it will take longer than 10 years for the sagebrush to return to pre-disturbance conditions (see discussion below), reclamation benefits will take longer to be realized than is estimated. This information should be used to more accurately determine impacts. The higher habitat loss on the project area should obviously be mitigated to account for deer habitat needs in any year when the deer would need it. Alternatives to address that loss and its mitigation should be included in project planning and analysis.

7-5 Poison Basin is also an important migration corridor for deer moving west to winter range along Powder Rim. This indicates that deer other than those that winter in Powder Rim could be affected. We believe the impacts to this important winter range complex as a whole should be discussed and mitigated, and planning should include alternatives to offset those impacts. A description and analysis of these impacts should be included in the Environmental Impact Statement.

7-6 The draft document estimates the time it may take for the shrub community to return to present conditions (5-15 years). Shrubs disturbed by mining in Poison Basin that occurred in 1984, not reclaimed between 1989-1992, has not returned to pre-disturbance quality today. The reclaimed areas contain mostly of grasses and sagebrush, with some small sagebrush. Comments were made about using controlled burning or chaining to benefit shrubs, but

Ms. Julie Hamilton
June 30, 1999
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7-6 unfortunately the time for the shrubs to return to pre-disturbance conditions will probably take longer than 10 years. Until the shrubs return to pre-disturbance conditions, more animals will be forced to use less winter range, especially when snow is deep. The increase in impacts due to slower reclamation to pre-disturbance conditions should be addressed in the Environmental Impact Statement.

7-7 Several of the roadside borrow pits within Poison Basin are infested with cheatgrass. Reclamation efforts should address this problem before disturbance from drilling occurs, in order to prevent the further spread of cheatgrass.

7-8 An error was noted in the hard unit boundary description. The west boundary for the Baggs Mule deer herd is along the Sierra Creek Road, not Highway 430.

7-9 In summary, we cannot overemphasize the importance of this winter range complex. There are a large number of deer that use it and some of deer are traveling a great distance to winter in this area. Other deer use the area seasonally as they move to other winter ranges. The development of a gas field in the middle of the complex poses a serious risk to this herd. The Game and Fish Commission's policy is to recommend no net loss of crucial winter ranges. We strongly recommend that these impacts be discussed, and project design and mitigation/reclamation activities be planned to result in enhancement of current habitat availability through the life of the project.

Thank you for the opportunity to comment.

Sincerely,

Bill Wichers

BILL WICHERS
DEPUTY DIRECTOR

BW/TC:ss
cc: USFWS

THE STATE OF WYOMING

Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

June 25, 1999

Through: Julie Hamilton, Wyoming Office of Federal Land Policy

Mr. Larry Jackson
USDI-Bureau of Land Management
Rawlins Field Office
1300 North Third Street
Rawlins, WY 82301

Re: South Baggs Area Draft Environmental Impact Statement

Dear Mr. Jackson:

8-1 The Air Quality Division (AQD) of the Wyoming Department of Environmental Quality (WDEQ) has reviewed the Draft Environmental Impact Statement and Air Quality Technical Support Document for the South Baggs Area Natural Gas Development Project. Attached you will find the Division's specific comments on the DEIS. Specific comments on the Air Quality Technical Support Document were also provided in a comment letter to Mr. Chris Miller dated June 24, 1999 on the Continental Divide/Wamsutter II Draft Environmental Impact Statement.

8-2 In the documents the Savage Run Wilderness Area is referred to as a PSD Class II Area which is incorrect. The Savage Run Wilderness Area is defined by the Wyoming Air Quality Standards and Regulations, Section 2(iii), as a Class I area. Although the Savage Run Wilderness Area is not a Federally designated Class I Area, through the State Implementation Plan and Wyoming Prevention of Significant Deterioration regulations, the Savage Run Wilderness Area is legally required to be managed as a PSD Class I Area. The Division believes that it is important to discuss the differences and differentiate between a Federally designated Class I Area and a PSD Class I Area.

- The Division suggests that in these documents the Savage Run Wilderness Area be referred to as a PSD Class I Area.

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Larry Jackson, BLM
South Baggs EIS
Page 2

8-2 • The Division also proposes that when discussing Air Quality Related Values (AQRVs), the phrase "PSD Class I Area" be changed to "Federally Designated Class I Area", the Savage Run Wilderness Area be referred to as a "State Defined Class I Area", and the phrase "PSD Class II Area" be changed to "Class II Area".

8-3 I would like to bring to your attention that as of 10/15/98 Section 2 of the Wyoming Air Quality Standards and Regulations was revised to be consistent with the Federal ozone standards (EPA promulgated a revised ambient ozone standard on 7/18/97). The revision eliminated the State's 1-hour ozone standard and instituted an 8-hour ozone standard of 140 µg/m3.

8-4 The documents disclose that the Limits of Acceptable Change (LACs) have been established by a US Forest Service policy for evaluating impacts to Air Quality Related Values in Wilderness Areas but fail to mention that the LACs are not regulatory limits or standards. Failure to disclose that LACs are not regulatory limits or standards may lead the average reader into believing that an air quality standard or limit is being violated based on the results of the visibility impact analysis.

8-5 The Division finds it troubling to see references to the Air Quality Technical Support Document Volume II to the use of Southwest Wyoming Technical Air Forum (SWWYTAF) information and modeling techniques. If federal SWWYTAF information has been utilized, it is inappropriate since the information and modeling have not yet been finalized, nor has WDEQ authorized the release of the information to the BLM or Harch Tech Inc. for use in the South Baggs Area EIS.

If you should have questions regarding the comments, please feel free to contact this office.

Sincerely,

Darla Potter
Visibility, Smoke Management, & SIP Coordinator
Air Quality Division

cc: Don Gross, Administrator
Bernie Dalley, NSR Program Manager
Mary Throne, Senior Assistant Attorney General

Larry Jackson, BLM
South Baggs Project
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June 25, 1999

8-10 regulations for mandatory enforceable requirement. Therefore, throughout the discussion of air quality related value impacts the sensitive areas are referred to as Federally designated Class I Areas, State defined Class I Areas, and Class II Areas."

The Division then proposes that throughout the rest of the document when discussing Air Quality Related Values (AQRVs) that the phrase "PSD Class I Area" be changed to "Federally Designated Class I Area", the Savage Run Wilderness Area be referred to as a "State Defined Class I Area", and the phrase "PSD Class II Area" be changed to "Class II Area".

8-11 Page 4-52, Last Paragraph
The first sentence fails to mention that the USFS Limit of Acceptable Change (LAC) should be compared to impacts to the best visibility (i.e. cases of the clearest 20%) days. Therefore the comparison of the "method 4" results to the USFS LAC is misleading. The Division would prefer to see the "method 2" results compared to the USFS LAC for appropriate disclosure of the predicted visibility impacts as compared to the LAC.

8-12 Page 4-53, 2nd Full Paragraph, 1st Sentence
The Air Quality Division does not examine "project-wide" (as in South Baggs Area Natural Gas Development Project) air quality impacts on permit applications submitted to the Division. Please amend this sentence to read
"...examine air pollutant emission source air quality impacts."

8-13 Page 4-54, 2nd Paragraph and Page 5-3, Section 3.3.3, 2nd Paragraph
The Division would like to point out to the BLM that the proposed South Baggs Area Natural Gas Development Project lies outside of the BLM Rock Springs District and does lie outside of the existing NO$_2$ modeling area. At present the Air Quality Division's database does not include all of the information necessary to implement a cumulative modeling system for the South Baggs Natural Gas Development Project as was done for the BLM Rock Springs District.

8-14 Page 5-3, Top of Page
The Division proposes that a paragraph be inserted before the 1st full paragraph on this page to differentiate between and disclose the difference between a Federally designated Class I Area and a PSD Class I Area. The suggested language for the paragraph follows.
"Federally designated Class I Areas are different from PSD Class I Areas, in that only Federally designated Class I Areas are afforded special protection with regard to visibility impairment by the recently signed regional haze rule and the existing visibility regulations for mandatory enforceable requirement. Therefore, throughout the discussion of air quality related value impacts the sensitive areas are referred to as Federally designated Class I Areas, State defined Class I Areas, and Class II Areas."

The Division then proposes that throughout the rest of the document when discussing Air Quality Related Values (AQRVs) that the phrase "PSD Class I Area" be changed to "Federally Designated Class I Area", the Savage Run Wilderness Area be referred to as a "State Defined Class I Area", and the phrase "PSD Class II Area" be changed to "Class II Area".

Larry Jackson, BLM
South Baggs Project
Page 3

WDEQ - AQD Comments
June 25, 1999

Comments on Draft Environmental Impact Statement

8-6 Page 3-11, Section 3.3.3, 2nd Paragraph
As of 10/15/98 Section 2 of the Wyoming Air Quality Standards and Regulations was revised to be consistent with the Federal ozone standards (EPA promulgated a revised ambient ozone standard on 7/18/97). Please add an additional sentence to the end of this paragraph to read
"The WDEQ-AQD revised the Wyoming Air Quality Standards and Regulations to be consistent with the revised Federal ozone standard on 10/15/98."

8-7 Page 3-11, Section 3.3.3, 2nd Paragraph
The Savage Run Wilderness Area is defined by the Wyoming Air Quality Standards and Regulations, Section 2(a), as a Class I area. Although the Savage Run Wilderness Area is not a Federally designated Class I Area, through the State Implementation Plan and Wyoming Prevention of Significant Deterioration regulations, the Savage Run Wilderness Area is legally required to be managed as a PSD Class I Area. The Division believes that it is important to disclose the difference and differentiation between being a Federally designated Class I Area and a PSD Class I Area. The Division suggests that in this paragraph the Savage Run Wilderness Area be referred to as a PSD Class I Area and that the following sentence should be inserted after the third sentence.
"Although the Savage Run Wilderness Area is not a Federally mandated PSD Class I area, it has the legal requirements to be managed as a PSD Class I area through the Wyoming Air Quality Standards and Regulations."

The Division also suggests that throughout of the document, with the exception of the air quality related value impact sections, be modified to reflect the Savage Run Wilderness Area as a PSD Class I Area instead of a PSD Class II Area.

8-8 Page 3-13, Table 3-6
As of 10/15/98 Section 2 of the Wyoming Air Quality Standards and Regulations was revised to be consistent with the Federal ozone standards (EPA promulgated a revised ambient ozone standard on 7/18/97). The revision eliminated the State's 1-hour ozone standard and instituted an 8-hour ozone standard of 140 µg/m3.

8-9 Page 4-53, 2nd Paragraph, 1st Sentence
The Air Quality Division does not examine "project-wide" (as in South Baggs Area Natural Gas Development Project) air quality impacts on permit applications submitted to the Division. Please amend this sentence to read
"...examine air pollutant emission source air quality impacts."

8-10 Page 4-53, 2nd & 4th Paragraphs
The Division proposes that a paragraph be inserted between the 2nd and 4th paragraphs on this page to differentiate between and disclose the difference between a Federally designated Class I Area and a PSD Class I Area. The suggested language for the paragraph follows.
"Federally designated Class I Areas are different from PSD Class I Areas, in that only Federally designated Class I Areas are afforded special protection with regard to visibility impairment by the recently signed regional haze rule and the existing visibility

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Larry Jackson, BLM
South Baggs Project
Page 5

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June 25, 1999

8-15 Page 5-4, 2nd Paragraph
The first sentence fails to mention that the USFS Limit of Acceptable Change (LAC) should be compared to impacts to the best visibility (i.e. cases of the clearest 20%) days. Therefore the comparison of the "method 4" results to the USFS LAC is misleading. The Division would prefer to see the "method 2" results compared to the USFS LAC for appropriate disclosure of the predicted visibility impacts as compared to the LAC.

8-16 Page 5-4, 1st Bullet, Last Sentence
The Division believes that this statement is accurate without cause both for the statement being identified. The Division has found that in the Incremental Emissions Tracking Reports for the BLM Rock Springs District in Southwest Wyoming that the emissions of NO$_2$ have been increasing from the 1997 4th quarter report, which reported incremental emissions changes during the 1/1/95 - 12/31/97 time frame, through the 1998 4th quarter report, which reported incremental emissions changes during the 1/1/96 - 12/31/98 time frame and in the last report available at this time.

8-17 Page 5-4, 2nd Bullet, Last Sentence
The statement in this sentence is inaccurate. The Southwest Wyoming Technical Air Forum (SWWYTAF) has contracted with Harch Tech Inc. for the development of a Secondary Organic Aerosol Module for the CALPUFF model to enable SWWYTAF to conduct the formation of secondary organic aerosols and predict visibility impairment due to these aerosols. This module has undergone preliminary sensitivity testing and is currently awaiting the initiation of the final model run. The final model run will be initiated once all supporting information is provided by the Harch Tech Inc. and approved by the SWWYTAF Technical Committee.

8-18 Page 5-4, Last Paragraph, 1st Sentence
The Air Quality Division does not examine "project-wide" (as in South Baggs Area Natural Gas Development Project) air quality impacts on permit applications submitted to the Division. Please amend this sentence to read
"...examine air pollutant emission source air quality impacts."

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COMMENT LETTERS RECEIVED ON THE DRAFT EIS

Larry Jackson, BLM
South Baggs Project
Page 6

WDEQ - AQD Comments
June 25, 1999

Comments on Air Quality Technical Support Document – Volume I

8-19 **Page 1, 4th Paragraph, 4th Sentence**
The Air Quality Division does not consider "project-wide" (as in Continental Divide/Wamsutter II Natural Gas Project) air quality impacts on permit applications submitted to the Division. Please revised this sentence to read
"...consider air pollutant emission sources air quality impacts."

8-20 **Page 5, 4th Paragraph**
Reference comment on DEIS for page 3-11, Section 3.2.2, 3rd paragraph for discussion of the Savage Run Wilderness Area as a Class I Area. The Division suggests that in this paragraph the Savage Run Wilderness Area be referred to as a PSD Class I Area and that the following sentence should be inserted as the last sentence in the paragraph.
"Although the Savage Run Wilderness Area is not a federally mandated PSD Class I area, it has the legal requirement to be managed as a PSD Class I area through the Wyoming Air Quality Standards and Regulations."

The Division also suggests that consistor of the document, with the exception of the air quality related value impact sections, be modified to reflect the Savage Run Wilderness Area as a PSD Class I Area instead of a PSD Class II Area.

8-21 **Page 10, 1st Bullet**
The USFS Limit of Acceptable Change (LAC) should be compared to impacts to the best visibility (i.e. mean of the cleanest 20%) days. Therefore the comparison of the "method 4" results to the USFS LAC is misleading. The Division would prefer to see the "method 2" results compared to the USFS LAC for appropriate disclosure of the predicted visibility impacts as compared to the LAC.

8-22 As mentioned in the Division's comment on the DEIS for page 4-12, 3rd & 4th Paragraphs, the Division proposed that when discussing Air Quality Related Values (AQRVs) that the phrase "PSD Class I Area" be changed to "Federally Designated Class I Area", the Savage Run Wilderness Area be referred to as a "State Defined Class I Area", and the phrase "PSD Class II Area" be changed to "Class II Area". The revised language proposed would apply to the 2nd sentence in this bullet.

8-23 **Page 1, 4th Paragraph, 2nd Sentence**
Reference comment on DEIS for page 3-11, Section 3.2.2, 3rd paragraph for discussion of the Savage Run Wilderness Area as a Class I Area. The Division suggests that in this paragraph the Savage Run Wilderness Area be referred to as a PSD Class I Area and that the following sentence should be inserted as the 2nd to last sentence in the paragraph.
"Although the Savage Run Wilderness Area is not a federally mandated PSD Class I area, it has the legal requirement to be managed as a PSD Class I area through the Wyoming Air Quality Standards and Regulations."

The Division also suggests that consistor of the document, with the exception of the air quality related value impact sections, be modified to reflect the Savage Run Wilderness Area as a PSD Class I Area instead of a PSD Class II Area.

Larry Jackson, BLM
South Baggs Project
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WDEQ - AQD Comments
June 25, 1999

8-30 **Page 26, Last Paragraph, 2nd Sentence**
The Division finds it troubling to see references to the used data collection efforts and simplified input modeling activities due to the overlap with the SWWYTAF modeling period. This comment suggests that information developed for SWWYTAF was used by the BLM and Earth Tech Inc. in performing the modeling for the Continental Divide/Wamsutter II EIS. If indeed SWWYTAF information has been utilized, it is inappropriate since the information and modeling has not yet been finalized, nor has WDEQ authorized the release of the information for any purpose.

8-31 **Page 30 - 31**
These pages describe Visibility Calculation Methods 2 and 4. Are these visibility calculation methods 1 and 3? If yes, why wasn't these calculation methods and corresponding results disclosed to the public in the Air Quality Technical Support Document?

8-32 **Page 30, Section 5.5, 2nd Paragraph, 2nd to Last Sentence**
This sentence fails to mention that the USFS Limit of Acceptable Change (LAC) should be compared to impacts to the best visibility (i.e. mean of the cleanest 20%) days.

8-33 **Page 33, Section 5.5, 1st Paragraph, Last Sentence**
The Division proposes that BLM differentiate between and disclose the difference between being a Federally designated Class I Area and a PSD Class I Area. The suggested language for modification and an additional sentence to the paragraph follows.
"...visibility in Federally designated Class I Areas, which are different from PSD Class I Areas, the goal, applicable to redesignated Class I Areas, State defined Class I Areas, or Class II Areas. Therefore, throughout the discussion of air quality related value impacts the sensitive areas are referred to as Federally designated Class I Areas, State defined Class I Areas, and Class II Areas. There are no applicable Colorado, Wyoming, or Federal visibility standards."

The Division also proposes that throughout the rest of the document when discussing Air Quality Related Values (AQRVs) that the phrase "PSD Class I Area" be changed to "Federally Designated Class I Area", the Savage Run Wilderness Area be referred to as a "State Defined Class I Area", and the phrase "PSD Class II Area" be changed to "Class II Area".

8-34 **Page 33, 2nd Paragraph**
The USFS Limit of Acceptable Change (LAC) should be compared to impacts to the best visibility (i.e. mean of the cleanest 20%) days. Therefore the comparison of the "method 4" results to the USFS LAC is misleading.

Larry Jackson, BLM
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WDEQ - AQD Comments
June 25, 1999

8-24 **Page 1, Last Paragraph, 4th Sentence (going onto page 2)**
The Air Quality Division does not consider "project-wide" (as in Continental Divide/Wamsutter II Natural Gas Project) air quality impacts on permit applications submitted to the Division. Please revised this sentence to read
"...consider air pollutant emission sources air quality impacts."

8-25 **Page 16, Last Paragraph, Last Sentence**
This statement is incorrect as the WDEQ-AQD continues to issue new source explore air pollutant emissions permits on a daily basis. The Division suggests modifying the sentence to read
"...facilities during the July 1, 1998 through April 30, 1999 time frame in the air quality..."

8-26 **Page 20, Table 5.1 and Page 36, Table 5.6 and Page 48, Table 5.13**
As of 10/1/98 Section 2 of the Wyoming Air Quality Standards and Regulations was revised to be consistent with the Federal ozone standards (EPA promulgated a revised ambient ozone standard on 7/18/97). The revision eliminated the State's 1-hour ozone standard and instituted an 8-hour ozone standard of 160 ug/m3.

8-27 **Page D1-1, 3rd Paragraph, 2nd Sentence**
The first part of this sentence is incorrect. Section 21(b) of the Wyoming Air Quality Standards and Regulations states that a facility has 24 months to commence construction after approval to construct to modify (i.e. permit issuance). The exception to this 24 month time frame is only for a permit containing a case-by-case MACT determination for which 18 months to commence construction is allowed. Please revise this sentence to read
"In Wyoming, a facility typically has 24 months to..."

Comments on Air Quality Technical Support Document – Volume II

8-28 **Page 1, 2nd Paragraph, 2nd Sentence**
Reference comment on DEIS for page 3-11, Section 3.2.2, 3rd paragraph for discussion of the Savage Run Wilderness Area as a Class I Area. The Division suggests that in this paragraph the Savage Run Wilderness Area be referred to as a PSD Class I Area and that the following sentence should be inserted as the 2nd to last sentence in the paragraph.
"Although the Savage Run Wilderness Area is not a federally mandated PSD Class I area, it has the legal requirement to be managed as a PSD Class I area through the Wyoming Air Quality Standards and Regulations."

The Division also suggests that consistor of the document, with the exception of the air quality related value impact sections, be modified to reflect the Savage Run Wilderness Area as a PSD Class I Area instead of a PSD Class II Area.

8-29 **Page 3, 1st Full Sentence**
The Division finds it troubling to see references to the use of Southwest Wyoming Technical Air Forum (SWWYTAF) modeling techniques, for the reasons stated in the comment below.

WYOMING

DEPARTMENT OF STATE PARKS & CULTURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE

Barry Helling
2301 Central Ave.
Cheyenne, WY 82002

(307) 777-7697
FAX (307) 777-6421

June 8, 1999

Larry Jackson, Team Leader
Bureau of Land Management
Rawlins Field Office
1300 North Third Street
Rawlins, WY 82301

RE: South Baggs Natural Gas Development, Draft Environmental Impact Statement (State Identifier Number: 99-0471); SHPO DELAMARSH

Dear Mr. Jackson:

Richard Currit of our staff has received information concerning the aforementioned project. Thank you for allowing us the opportunity to comment.

9-1 Management of cultural resources on Bureau of Land Management (BLM)projects is authorized in accordance with Section 106 of the National Historic Preservation Act and Advisory Council regulations 36 CFR Part 800. These regulations call for survey, evaluation and protection of significant historic and archaeological sites prior to any disturbance. Provided the BLM follows the procedures established in the regulations, we have no objections to the project. Specific comments on the project's effect on national register sites will be provided to the BLM when we review the cultural resource documentation called for in 36 CFR Part 800.

Please refer to SHPO project control number DELAMARSH on any future correspondence dealing with this project. If you have any questions contact Richard Currit at 307-777-6437 or me at 307-777-6301.

Sincerely,

Jeff Wolf
Deputy State Historic Preservation Officer

JDW:RLC:jh

Jim Geringer, Governor — John T. Keck, Director

COMMENT LETTERS RECEIVED ON THE DRAFT EIS

State Engineer's Office

[redacted]

Memorandum

[redacted]

10-1 [redacted]

[redacted]

11-4 [redacted]

11-5 [redacted]

11-6 [redacted]

11-7 [redacted]

11-8 [redacted]

11-9 [redacted]

11-10 [redacted]

[redacted]

11-1 [redacted]

11-2 [redacted]

11-3 [redacted]

11-4 [redacted]

[redacted]

11-10 [redacted]

11-11 [redacted]

11-12 [redacted]

11-13 [redacted]

11-14 [redacted]

11-15 [redacted]

11-16 [redacted]

[redacted]

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COMMENT LETTERS RECEIVED ON THE DRAFT EIS

Continental Divide/Wamsutter II EIS Comments

pg vii, paragraph 3, line 7: "potential sites..." Does not consider results of Method 2 analysis, even though it is stated in the for field analysis (pg iii, paragraph 4) "...the combination of the two approaches (Method 2 and Method 4) provided a reasonable bracketing of the likely impacts on visibility." Why have only the results from the method with the least impact on visibility ("method 4") been selected to display to the public?

pg 3-2, paragraph 2: Much of this section is incomplete.
- Did not list NAMP sites at Hiko Canyon or South Pole. Were these used in your modeling? If not, why not?
- Did not mention the data collected by the USFS (Deep Lake (Bridger Wilderness) and Bridalbag Lake/Popo Agie Wilderness) which was used in analysis.
- The modeling also used data from the BLM RIOGN site at Pinedale, so it should be mentioned here.

pg 4-9, col 2, paragraph 2:
The modeling uses Rock Springs surface meteorological data and Lander upper air data. Should there have been one of some surface met. data to supplement the part of the CD/Wam project on the eastern side of the continental divide site?

pg 4-9, col 2, paragraph 2:
The text states "The maximum predicted "near field" air pollutant concentrations occur close to and between well locations and would occur no closer to each well location that adding additional wells throughout the field would not increase the overall maximum concentration." Is this reasonable/logical?

pg 4-10, paragraph 2: Lists only results from "method 4" analysis for for field visibility, even though the for field analysis states (pg iii) "...the combination of the two approaches (Method 2 and Method 4) provides a reasonable bracketing of the likely impacts on visibility." Why is this?

pg 4-20: Inclusion of Pinedale Anticline project in cumulative effects:
The Pinedale Anticline project was speculative when the work on this project was initiated in March of 1999. However, by mid 1999, the Pinedale Anticline project was refined enough so that potential impacts should have been included in the cumulative effects model. As the modeling protocols were not finalized until late 1999, and the air modeling analysis for this project was not completed until spring of 1999, there should have been adequate time to incorporate the Pinedale Anticline emissions into the cumulative analysis.

page 1-6 The Bowling Field office will amend the RMP numbers for wells in this EIS if all of the wells are allowed. Will an amendment to the RMP be required to allow the additional wells prior to signing of a ROD for this document?

Continental Divide/Wamsutter II/South Baggs Air Quality Impact Assessment Technical Support Document Comments
Vol 1 - For Field Analysis

General Comment:
The way the For Field analysis was done, combining the Continental Divide/Wamsutter II and South Baggs Natural gas development projects together in one analysis, makes interpretation of the air quality effects of one project vs another impossible to determine. The purpose of this environmental document is to fairly disclose for the public and the decision maker the effects of a proposed action on the environment. Since this is proposed as two discrete projects and will result in two decision documents, combining the analysis does not display the effects of each project on the environment. While we appreciate that both projects were considered to show the cumulative impacts of both, the modeling should also address what percent of the air quality impacts were attributable to emissions from each separate proposed action.

11-29

11-30 pg 1b: Column what? vectors. This graphic needs to be printed at a larger scale to allow people to see the vectors without the use of a hand lens.

11-31 pg 27, paragraph 2: "Historic receptors are also placed at lakes identified by the USDA Forest Service and the USGS as the most sensitive to acid deposition." This is not genuinely true. Some long-term sample lakes were selected to be the most sensitive, while others simply represent lakes with long term monitoring data. It would be more accurate to say "Historic receptors are also placed at lakes identified by the USDA Forest Service and the USGS as long-term sample lakes for measuring impacts from acidic deposition."

11-32 pg 29 paragraph 2: Forest Service Visibility Analyst Sam Copeland finds the exponent on relative humidity (RH) adjustments to cloud water (fog) and relatively. The paragraph seems to assert that clouds RH, relative humidity there are likely to be clouds, therefore all data above 90% RH should be discarded. The presence of clouds does not make visibility worse or less sensitive to impairment. In addition, the presence or lack of clouds is irrelevant to the visibility analysis. It is also not true that "optical monitoring devices are not reliable at humidity values above this level" (We invite the BLM to provide evidence of this statement, if they insist on excluding it). If the BLM's argument for the "Method 4" visibility bracket is that actual meteorological conditions and daily actual visibilities should be used, then we contend that actual relative humidities should also be included, and no data rejected on the basis of RH values in excess of the PSD/AQRV recommended limits of 90%.

11-33 pg 31, paragraph 1: This indicates that looking at 1999 data only (method 4) is better than looking at long-term 20th element background data. We disagree. The FS has always used the average of the 20th element as the baseline by which to determine change. Using method 4 is not consistent with FS protocols, PSD/AQRV recommendations, or BLM's regional haze regs. There should be a better discussion of the differences between method 2 and method 4, as well as comparison of the initial model runs with methods 1,2, and 3.

11-34 pg 31, paragraph 2: This states that "...the combination of the two approaches (Method 2 and Method 4) provides a reasonable bracketing of the likely impacts on visibility." However, the EIS discloses the results of Method 4 as the impact. This is not proper considering that Method

Continental Divide/Wamsutter II South Baggs Air Quality Technical Support Document Comments
Vol 1, Near Field Analysis

11-17 pg 8, last paragraph: Has an typo "is the or the".

11-18 page 2: Map is wrong. It shows South Baggs proposed in Colorado. If this map was produced from the model, the modeling may not be accurate. Also fig 1.1, pg iii.

11-19 page 3 and 4: There are numerous inconsistencies within this section and the South Baggs and CD EIS (see table below)

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Drilling	[illegible] per day pg 4 Actual calculations use 10 days at 24 hours per day pg 4-20	[illegible] pg 4-20 up to 2 days pg 4-7	[illegible] 10 days pg 4-20 up to 2 days pg 4-7

11-20 Since the general public did not receive the Near Field Analysis Doc, it is unacceptable to assume that the public is not informed as to the actual impacts that are being modeled for?

11-21 pg 23, paragraph 3: The development is located 30 miles west (not east) of Rawlins. (delight lady of Rawlins was shown on fig. 1.1)

11-22 pg 33, section 4.1: The reasoning used for applying the Baggs data to the South Baggs analysis should apply to a large portion of the CD/WII proj/Jackson sites. Therefore should use Baggs climatic data for part of the CD/WII analysis area.

11-23 pg 34, TM 4.1: Table title is misleading. It implies the data is mentioned from the project area, when in fact it is compiled from several different sources.

11-24 pg 38, paragraph 1, last sentence: Were the wells spaced to maximize potential emissions?

11-25 pg 31: Flaring, venting, and blowdown of wells to increase production should be included in the cumulative impact analysis for emissions impacts on AQRVs. The emissions of temporary emissions to determine increased emissions, does not relate to cumulative emissions impacts on visibility and visible deposition impacts, and these should be addressed in the document. Blowdown is a continued process for the life of the project, and emissions from this process do not appear to be addressed.

11-26 pg 51-5, TM 51-1.3: Table description is misleading, sounds as if labeled horses to describe where is the site.

11-27 pg C1-3: Why are Baggs wind data here for wind sensitive emissions, when Rock Springs data is used for other CD analysis?

11-28 Appendix D: Copies are of such poor quality that they may not be useful

11-34 It is consistent with FS protocols for screening impacts in Class I wilderness areas, while Method 4 is not.

11-35 pg 45, paragraph 4: These assumptions may not be valid. The Bridger site is located on the west side of the Continental Divide. Wind and atmospheric conditions which would affect the west side would likely be different on the east side. Expect differences between east and west side of continental divide will play into this. Also, the assumption of uniform conditions is not likely due to topographic features and layering equilibrium.

11-36 pg 48 and 49, TM 5-1.1: The ARC numbers shown are included for Deep Lake and Lower Bridalbag Lake are not correct. In our August 13, 1999 letter to Sam Ambre, we requested that the BLM use the Forest Service lidar data that we had previously sent to them for Deep and Lower Bridalbag and that for the visible deposition analysis the lower ARC values field should be used in the modeling. The values listed instead contain the average ARC values. We request that the BLM re-model impacts to these two lakes using the numbers 49 mg/l for Deep Lake ARC and 39.3 mg/l for Lower Bridalbag Lake ARC. These ARC number are for the 1000 lowest sensitivity ARC, which is currently the acceptable FS methodology for screening impact to lakes where sulfur/nitrogen monitoring data exists.

11-37 Table 5-11: For visible deposition impacts to lakes, subjective normalized values are shown and not the equations with which they are derived. Please include these equations, so that the whole process is transparent.

11-38 Appendix C: Forest Service Visibility Analyst Sam Copeland has reviewed the letter from Sam Ambre to Joe Saltes regarding the operation of the IMPROVE visibility data for use in preparing these visibility impacts to Mt. Bldad wilderness. Sam Copeland conducted a thorough review of the Mt. Bldad monitoring data to determine the validity of the numbers in the letter. Sam Copeland determined that there is no valid source of data for the Mt. Bldad data. In fact data available shows that the Mt Bldad data has the same distribution, outliers and variability as the IMPROVE data. Analysis indicates that the Mt. Bldad data is "valid, sound, and applicable". In fact the only real difference between the data of Mt. Bldad and IMPROVE is that Mt. Bldad data shows slower visibility. In addition, data from the Mt. Bldad site indicates measured relative humidity (RH) is higher. Both the higher RH and the slower Mt. Bldad visibility indicate that by mechanically using IMPROVE data to represent Mt. Bldad the future visibility impact at Mt. Bldad from the proposed actions may be greatly underestimated. Remodeling using the correct background data should be done between the BLM and Forest.

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South Baggs DEIS
Comments

11-39 General Comment: [illegible]

11-40 pg 3-11, Tbl 3-4: [illegible]

[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

11-41 pg 3-17, Tbl 3-2: [illegible]

11-42 pg 3-41, Tbl 3-4: Air Quality, Range Resources, Wind Resources, Fisheries, vegetation & Wetlands, Wildlife and Cultural all have "NIE of [illegible]" [illegible]

11-43 pg 3-34, paragraph 4: Uinta Technologies is listed [illegible]

11-44 pg 3-34, Tbl 3-34: [illegible]

11-45 pg 4-5, 4.2.1, introduction: This section is missing

11-46 pg 4-7, 4.2.3.2: [illegible]

WYOMING OUTDOOR COUNCIL

[illegible]

July 19, 1999

RECEIVED
[illegible]

Larry Jackson, Project Coordinator
Rawlins Field Office
Bureau of Land Management
P.O. Box 2407
Rawlins, WY 82301-2407

RE: SOUTH BAGGS AREA NATURAL GAS DEVELOPMENT PROJECT DEIS

Dear Larry:

The Wyoming Outdoor Council (WOC) appreciates this opportunity to comment on the South Baggs Draft Environmental Impact Statement (DEIS). As you know, WOC has an ongoing interest in oil and gas development and its impacts in Southwest Wyoming. It is our position that the development of this resource should proceed in a manner that protects the surface resources of the public lands. WOC encourages the BLM to consider a conservation alternative and a real "no action" alternative to the proposed action in the Final EIS.

12-1 WOC [illegible]

12-2 [illegible]

THE BLM MUST PROTECT THE SURFACE RESOURCES OF THE PUBLIC LANDS.

12-3 Pursuant to the Federal Land Policy and Management Act (FLPMA), 43 U.S.C. § 1701 to 1784, the BLM must protect the public land. According to Section

Wyoming Conservation Action Since 1957

11-47 pg 4-7, 4.2.3.3, paragraph 2, first sentence: [illegible]

11-48 pg 4-7, 4.2.3.3, paragraph 4: "Natural gas would be [illegible] for up to 5 days." Why was the [illegible] (pg A-3-12) done with [illegible] for 14 days?

11-49 pg 4-11, 4.2.3.4: Quantity [illegible]

11-50 pg 4-11, paragraph 2: [illegible]

11-51 pg 4-12, last paragraph: [illegible]

11-52 pg 4-2: Coordination and Consultation. [illegible]

11-53 Table [illegible]
Data for Sewell is missing.

1732(b)(emphasis added). "In managing the public lands the Secretary shall, by regulation or otherwise, take any action necessary to prevent unnecessary or undue degradation of the lands." Additionally, the BLM shall manage its resources under the principles of multiple use and sustained yield. 43 U.S.C. § 1732(a). FLPMA defines "multiple use" as the management of the public lands to:

> [illegible]

12-3 43 U.S.C. § 1702(c).

Following this direction, multiple use for the South Baggs area would imply planning and pacing natural gas development to "provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions." Especially given the extensive natural gas development throughout Southwest Wyoming, it is essential that the BLM provide "sufficient latitude" to ensure that industrial development does not overwhelm all the other resources. In other words, by committing vast stretches of Southwest Wyoming to industrialization, the BLM will not be able to provide for the long-term needs of future generations. Clearly, the American public has expressed a desire and need to sustain wildlife, clean water and air and the full range of recreation opportunities. The BLM must balance these needs with the development of natural gas in Southwest Wyoming. The BLM must not allow these invaluable surface resources to be impaired or degraded to achieve the greatest economic return and unit output for the oil and gas operators.

More specifically, BLM's regulations detail the agency's responsibilities regarding oil and gas development. The regulations, at 43 C.F.R. § 3161.2, state (emphasis added):

> The authorized officer is authorized and directed to approve . . . development or production of oil and gas . . . to require compliance with lease terms, with the regulations in this title and all other applicable regulations promulgated under the cited laws; and to require that all operations be conducted in a manner which protects other natural

2 Wyoming Outdoor Council – South Baggs DEIS Comments

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COMMENT LETTERS RECEIVED ON THE DRAFT EIS

12-3

[illegible]

We understand industry's view that this rule requires maximum ultimate recovery. Moreover, you cannot ignore the preceding phrase that requires protection of natural resources and environmental quality. The regulation clearly requires protection of the environment AND maximum ultimate recovery, thus, the duty to protect the environment is a prerequisite limitation on maximum ultimate recovery.

Even more specifically, the Standard Lease Terms at Section 6, state (emphasis added):

> Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land users or users. . . . To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures.

12-4

Thus, the BLM has ample authority to require oil and gas exploration and development to proceed only in a manner that protects all other natural resources and environmental quality. Moreover, regarding the protection of plant and animal species that are protected by, or may reach the protection of the Endangered Species Act, the BLM must take affirmative steps to protect these species. 16 U.S.C. § 1536(a). Because that the impacts of development on wildlife are largely unknown, the BLM should proceed with enough latitude in the pace and spacing of development to make adjustments to wildlife needs. Given this clear and simple authority to protect surface resources, and the importance and sensitivity of the resources in the South Baggs area, we ask that you re-examine the alternatives for this project and the effects of this project. We ask that consider fewer wells and phased development.

GIVEN THE BLM's OBLIGATIONS TO PROTECT SURFACE RESOURCES THE BLM SHOULD CONSIDER A NATURAL RESOURCE PROTECTION ALTERNATIVE.

12-5

Because we know that the South Baggs area contains crucial wildlife habitat including crucial winter range (97.9 % of the project area is crucial mule deer and antelope winter range), raptor concentrations and potential threatened, endangered and sensitive (TES) habitat, and because the sage grouse is a sensitive species requiring special consideration and protection, the BLM must take a hard look at an alternative that emphasizes specific measures to protect

12-11

alternatives. In number two of the 40 Most Asked Questions, 46 Fed. Reg. 18026 (1981), the CEQ states:

> In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.

Number two of the 40 Questions continues, "Inje alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered." Therefore, even if the law prohibited BLM from limiting development, it should still consider in detail a conservation alternative.

12-12

Recently, the IBLA, in Southern Utah Wilderness Alliance et al., 141 IBLA 79, supported the BLM in fully analyzing the impacts of oil and gas development on desert bighorn sheep even though the RMP and the lease did not even acknowledge the presence of the sheep. Further, the IBLA supported the BLM in providing protection for the sheep in order to "avoid unnecessary and undue degradation of the public lands." 141 IBLA at 79. In supporting the APD for the well, the BLM attached conditions of approval that significantly expanded the protections afforded the sheep compared to the protections included in the RMP and lease.

We ask the BLM to perform the same level of analysis and provide the appropriate levels of protection here. The BLM should fully analyze the impacts of oil and gas on all the surface resources of the South Baggs area, should fully consider a conservation alternative that incorporates a wide array of resource protective measures and the BLM should include stringent protection for the surface resources in approving any and all APDs.

No Action Alternative

12-13

The BLM must consider a no action alternative that provides a baseline look at the effects of not approving the proposed project. Without a baseline to compare the effects of the projects to not allowing the project the BLM risk failing to meet NEPA's requirement to give the project a hard look. Without consideration of a real no action alternative, the DEIS is fatally flawed. In this DEIS, the BLM has arbitrarily chosen a no action alternative that represents continuation of natural gas development based on case-by-case analyses. Instead, the no action alternative should describe no further development in the South Baggs field.

Consideration and thorough analysis of the no action alternative is required under NEPA. This requirement is spelled out in the Council on Environmental Quality regulations, 40 CFR 1502.14(d). According to 40 C.F.R. 1502.14, alternatives are the "heart of the environmental impact statement." An EIS

12-5

the surface resources of the South Baggs area. We ask the BLM to develop and analyze an alternative that would provide greater protection for sensitive resources and values affected by impacts from natural gas development activities. Under this alternative BLM would prohibit, for example, development in visually sensitive areas, in crucial big game winter range and birthing areas within 1 mile of active raptor nests, breeding areas, and winter range within wetlands, riparian, and floodplains on steep slopes and sensitive soils within 1/2 mile of open water sources in areas containing sensitive cultural resources or optimal sites in potential black-footed ferret habitat in ACECs and WSAs and within 1 mile of sundances.

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The Continental Divide/Wamsutter II DEIS provides for protection of Sensitive Resource Areas (SRAs). SRAs include areas with established sand dunes, raptor nesting areas, crucial habitat, cultural resource sites, traditional areas and Visual Resource Areas. Why doesn't the South Baggs provide for the same kind of protection?

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Rather than limiting its analysis of wildlife impacts to disturbed acres, the DEIS should consider well densities and the wildlife habitat values of the acres to be disturbed. Not every acre is of equal value to wildlife and the BLM must ensure that it protects important wildlife habitat rather than merely limiting the number of acres that can be disturbed.

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In a conservation alternative, the BLM should consider concentrated development facilities as a means to minimize surface impacts. By consolidating compressor stations and other gas related facilities to one location the impacts to the environment may be lessened.

12-9

For protection of sage grouse, the EIS should consider modifying livestock grazing practices to reduce impacts to grouse from natural gas development.

12-10

A conservation alternative that includes measures to protect the unique wildlife, scenic, water and air quality and other resources of the South Baggs area is within the BLM's jurisdiction and is certainly a reasonable alternative that must be considered under NEPA. It is reasonable because the BLM has a duty to protect the natural resources of the public lands and the South Baggs area contains outstanding and irreplaceable wildlife and other natural resources.

12-11

Even if the BLM is still convinced that it does not have the authority to impose environmental protection measures on leaseholders it nonetheless has the responsibility under NEPA to consider a conservation alternative in the EIS. Alternatives are the heart of an EIS. 40 C.F.R. § 1502.14. An EIS "should present the environmental impacts of the proposed and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. § 1502.14. According to NEPA's regulations, the BLM shall "include reasonable alternatives not within the jurisdiction of the lead agency." The Council on Environmental Quality (CEQ) has further explained NEPA's requirement to consider reasonable

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should present the environmental impacts of the proposed and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. Consequently, the no action alternative that analyzes what would happen if the agency took no action must be included and may not be eliminated from detailed study. See 40 C.F.R. 1502.14(d).

As explained by the Council on Environmental Quality (CEQ) in the 40 Questions, "It is difficult to think of a situation where it would not be appropriate to address a 'no action' alternative." In fact:

> [T]he regulations require the analysis of the no action alternative even if the agency is under a court order or legislative command to act. This analysis provides a benchmark, enabling decisionmakers to compare the magnitude of environmental effects of the action alternatives. It is also an example of a reasonable alternative outside the jurisdiction of the agency which must be analyzed. Section 1502.14(d).... Inclusion of such an analysis in the EIS is necessary to inform the Congress, the public, and the President as intended by NEPA.

Section 1502.14(d) 46 Fed. Reg. 18026 (1981). NEPA's Forty Most Asked Questions. Question 3 (emphasis added).

Thus, an EIS must include the no action benchmark to enable decisionmakers to determine if the project will have a significant impact. The BLM must analyze and disclose what would happen in the South Baggs area if no additional wells, roads, pipelines, etc. were allowed? What would be the effects on the area's wildlife, water quality, recreational opportunities, cultural resources, etc., if no action was taken? What benefits would accrue to the study area if things were left alone and no more natural gas development occurred? The BLM must study and disclose the effects of a real no action alternative in the Final EIS.

THE ACTION MUST COMPLY WITH THE RMP

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According to FLPMA, at 43 U.S.C. § 1732(a)(emphasis added):

> The Secretary shall manage the public lands under principles of multiple use and sustained yield, in accordance with the land use plans developed by him under section 1712 of this title when they are available, except that where a tract of such public land has been dedicated to specific uses according to any other provisions of law it shall be managed in accordance with such law.

The project must comply with all the requirements of the land use plan. If the BLM relies on mitigation measures to make this project comply with the RMP, the agency must insure that these mitigation measures are performed and are effective.

CUMULATIVE EFFECTS

12-15 As you know, WOC has long argued that the BLM should perform an EIS to analyze the cumulative effects of oil and gas development in Southwest Wyoming. This project is yet another example of why such a study is needed. The BLM does not have adequate data and has not performed adequate studies to understand the impacts of this project, let alone the impacts of all the development projects in Southwest Wyoming. The information base on wildlife impacts is inadequate to develop a plan to ensure the future viability of antelope, elk, sage grouse, mule deer, moonwalk grouse, raptors and other wildlife. We should understand the cumulative impacts to wildlife species such as the sage grouse before they get to the point where they require protection under the Endangered Species Act. We should understand the cumulative impacts to all natural resources before permitting more and more wells in the area.

Regardless of the need for a region-wide assessment, the Final EIS should clearly identify the cumulative effects analysis area for each resource considered. For air quality, all existing, proposed, and reasonably foreseeable future emissions sources in the Greater Green River Basin should be considered (please see our comments on air quality). For wildlife, the analysis should determine whether significant effects established in previous EISs will be exceeded.

PRIVATE LANDS

12-16 Cumulative effects analysis may not be limited to public land, the BLM is obligated to analyze cumulative impacts of actions on private lands, and its effect on public resources. The EIS must analyze and disclose the effects of development of private lands in the area. NEPA regulations define "cumulative impact" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7.

We request that the EIS detail and analyze the effects of all other projects (BLM, other federal agencies, state, private, or otherwise) that would lead to cumulative effects in and around the analysis area. The EIS must consider past, present, and reasonable foreseeable future actions on surrounding private lands.

For every issue presented in the DEIS, the BLM must consider the direct, indirect and cumulative impacts on private lands. This is especially true for cumulative effects and species protected by the Endangered Species Act. The BLM should add extra protection for all resource resources on federal land given the effects of development on non-federal lands. Additionally, development on federal lands will encourage development on non-federal lands. The EIS must consider the effect of encouraging and facilitating development.

12-20 WOC would like to see the BLM commit to verifying the implementation and effectiveness of all proposed mitigation. If the mitigation is either not being implemented or is not effective the BLM must either stop the damaging activity or require effective measures to prevent resource damage. Moreover, the BLM should make all monitoring and mitigation results available for public and independent scientific review.

AIR QUALITY

12-21 Emissions from oil and gas production and transmission activities are significant sources of atmospheric pollutants including NOx and VOCs such as benzene and toluene, known carcinogens. In southwestern Wyoming, emissions from oil and gas operations are exceeding or have the potential to exceed establishment of ambient ozone levels and significant visibility impairment in nationally significant Wilderness areas. Emissions from the Continental Divide/Wamsutter II (CD/WII) and the South Baggs gas development project will adversely impact air quality.

Cumulative Effects

12-22 While we appreciate the BLM's efforts to show the cumulative effects of the South Baggs and CD/WII projects on air quality, we would also like to know the specific air quality effects of CD/WII and South Baggs separately. Without the separation of the two projects we cannot determine how much of the impacts are attributable to each project. Additionally, the Pinedale Anticline natural gas

12-23 development project, with 700–1,000 proposed wells, should be included in the cumulative effects analysis.

12-24 WOC asks the BLM to include construction, fracing and blowdown emissions in the cumulative air quality analysis. These temporary emissions can have impacts on visibility and establishment of ozonelike levels. These sources cannot be ignored in the cumulative analysis without misleading the public as to the real impacts of natural gas development.

Visibility Impacts

12-25 As you know, WOC has a long-standing interest in and concerns about the horizontal effects of natural gas development in Southwest Wyoming on the protected air sheds of the surrounding mountains and Wilderness areas. According to the combined air quality analysis, the visibility impacts of this project and the CD/WII Natural Gas Development Project exceed the Limit of Acceptable Change established by the U.S. Forest Service. The limit will be exceeded on 8 days in the Bridger Wilderness, 7 days in the Fitzpatrick Wilderness, 6 days in the Mt. Zirkel Wilderness, 6 days in the Savage Run Wilderness (which is incorrectly described as a Class II area), 4 days in the Rawah Wilderness and 1 day in the Flaming Gorge Wilderness (CD/WII DEIS). Add these days to the impairment from the South Baggs, the Pinedale Anticline, Sagebrush Draw, etc., and Wyoming risks losing its sportsmanship and world

12-16 Similarly, the BLM must consider the impacts of granting rights of way through non-federal lands. The establishment of a ROW is a federal action significantly affecting the environment and is connected to the proposed project on federal land.

MONITORING AND MITIGATION PLANS ARE INADEQUATE

12-17 In the context of an EIS, an agency is required to discuss the extent to which adverse effects can be avoided by mitigation measures. "A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by the NEPA." *Northwest Indian Cemetery Protective Assoc. v. Peterson*, 795 F.2d 688, 697 (9th Cir. 1986). Moreover, the efficacy of mitigation measures must be supported by substantial evidence and such have been found to be sufficiently supported when based on studies conducted by the agency. *National Audubon Society v. Hughes*, 133 F.3d 7 (2d Cir. 1997).

Under NEPA the BLM must use the best available and current information in making resource management decisions. The agency must know what it is doing and must tell the public what it is doing. NEPA regulations require that public information be of "high quality" because "informed scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146 (9th Cir. 1998); 40 C.F.R. § 1500.1(b).

12-18 The monitoring plan outlined in the DEIS is not based on high quality accurate scientific analysis and is inadequate to support the proposed mitigation plan. The proposed monitoring is too little, too infrequently. With inadequate monitoring, the effects of development will go unnoticed and thus will not trigger mitigation.

12-19 The BLM must have more information regarding wildlife in the South Baggs area before it can tailor monitoring and mitigation plans for this project. The plans must be able to withstand rigorous scientific scrutiny. Specifically the BLM needs more information of sage grouse, their numbers and distribution, crucial winter range use, the presence of TES species and the cumulative effects of this and all the other proposed projects in the ranges of the species found in the South Baggs area. The BLM must know and disclose what the effects will be and must plan for effective mitigation before making the decision to approve this project.

12-20 BLM's previous failures (e.g. SW Resource Evaluation; Pennsylvania bill "more bones", South Baggs wildlife monitoring) to meet stated commitments for monitoring and mitigation leave us with little confidence that the proposed plans for South Baggs will be carried out. We are left with no guarantee that the mitigation measures specific to this project will be implemented. This is especially true and troubling in light of BLM's interpretation that mitigation can only be encouraged as voluntary actions by operators. In general, mitigation is left up to the good will of the operators, hardly a situation that inspires confidence in the implementation and effectiveness of the proposed mitigation.

12-25 human views. However, the DEIS downplays and ignores these results at the same time the BLM uses questionable methods to achieve these results.

12-26 Strikingly, the BLM used the level of concern of 1.0 deciview rather than the agreed upon Forest Service .5 deciview level of concern. The BLM must recalculate the level of impairment using the .5 deciview figure.

12-27 It is also disconcerting that the BLM chose industry's preferred method (Method 4) rather than during the Forest Service, National Park Service, EPA, IWAQM and Wyoming DEQ's preferred method (Method 3). Not surprisingly, Method 4 results in the lowest end of impacts. How does the BLM explain the comments that Method 4 is "more robust" and results in "more realistic estimates"? If this is the case, why do the other agencies prefer Method 3? And why would the BLM prefer a method that only uses one year of baseline visibility data versus a 5-year average? Surely a baseline baseline is more representative than one year of data? The BLM further confuses the public by combining the two models without disclosing their results separately and then choosing to display only the results from Method 4 that diminish the visibility impacts. We ask the BLM to use Method 3 for the Final EIS.

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12-29 WOC also questions the BLM's selection of the Mt. Zirkel visibility background data in favor of the Rocky Mountain National Park data. The visibility impacts should be re-assessed using Mt. Zirkel's background.

12-30 We ask that the BLM re-do this analysis for the Final EIS and address our concerns listed above and any other concerns brought to the BLM's attention by other commentors. Moreover, because this project will result in impairment of Class I airsheds, the BLM must insure that adequate mitigation measures are in place to offset this degradation.

Specific Recommendations

12-31 • Ambient air quality stations should be installed in the project area near major sources of NO_x, SO_2 and VOCs. With such information, the BLM and Wyoming DEQ could determine whether emissions are exceeding national and Wyoming ambient air quality standards. Without this information, all that is available are universal assumptions.

12-32 • Additional ambient air quality stations should be installed for hazardous air pollutants such as benzene, toluene, xylene, n-hexane, etc. Dehydrator units and condensate tanks are major sources of these hazardous air pollutants. Employees and the public should be made aware of the risk of exposure to HAPs.

12-33 • Feasible and best available pollution control should be required on all sources of volatile organic compounds (VOC) and hazardous air pollutants (HAP), not merely those that exist in excess of 25 TPY VOC and 25 TPY HAP. The DEQ's existing policy excepting these smaller sources results in significant emissions that could easily be controlled by readily available pollution control

technologies. It is possible and feasible to eliminate VOC and HAP emissions from oil and gas production operations.

WATER QUALITY

12-34 The Final EIS should indicate existing and proposed water quality standards for each surface water proposed as a receiving for produced water. The EIS should note that 1) Wyoming is in the process of revising the water quality standards (Water Quality Rules Chapter 1), and 2) that many existing classifications are incorrect and illegal because they fail to protect existing and attainable uses and provide basic aquatic life protections. For example, all waters in the South Baggs area presently designated Class 4 do not contain the appropriate and legally required aquatic life criteria. All such waters must be protected at a minimum for aquatic life uses and until a use attainability analysis (approved by DEQ and EPA after a public hearing) demonstrates the use is not attainable.

12-35 The EIS should note that under EPA water quality regulations at 40 C.F.R. § 122.4(i), point source discharges are not authorized into "water quality limited segments" identified on the state's section 303(d) list. The BLM should ensure that there will be no point source discharges into 303(d) waters as a result of this project.

12-36 The BLM should ensure that the project conforms to the Proposed Strategy for a Unified Watershed Approach to Federal land and Resource Management.

WILDLIFE

12-37 This project will have significant impacts on wildlife including big game and raptors. The loss of thousands of acres of crucial winter range is clearly significant. The impacts of this and surrounding projects are potentially degrading Southwest Wyoming's sagebrush ecosystem and all the species that rely on that system. If the sage grouse is any indication, which of course it is, our sagebrush steppe ecosystem are showing signs of failure. Restoration of sagebrush is extremely difficult and may take many decades to achieve. Thus, this project may be a devastating blow to the sagebrush ecosystem in the term. The BLM has a duty to do all it can to prevent the continued degradation of this endangered Western landscape.

12-38 As we emphasize throughout these comments, the BLM must have adequate, recent data and analyses before making such serious and potentially damaging decisions. The BLM must know what the impacts will be to all of the species found in the area including small mammals, reptiles, birds, fish and amphibians. The BLM should also consider the impacts to species potentially found in the area such as swift fox, black footed ferrets, mountain plovers, etc.

12-39 We encourage the BLM to follow the example of the Pinedale Anticline project and gather good baseline data before placing the area's wildlife in the exhibit of an industrial landscape.

12-44 range. Additionally, the BLM should survey, map and analyze the losses in the project area to determine if lease removal could mitigate losses to the area's pronghorn and deer.

Black Footed Ferret

12-45 The BLM should follow the FWS guidelines for Black Footed Ferret surveys. The BLM should survey all areas within half a mile of a prairie dog town for Black Footed Ferrets. As with the mountain plovers, the connections between ferrets and prairie dogs must be given adequate consideration in the Final EIS.

Birds

12-46 Pits should be netted or when possible enclosed in tanks. Flagging is ineffective to keep birds out of pits.

CULTURAL RESOURCES

12-47 The BLM should initiate consultation and field trips with Native American Indians in order to identify and facilitate protection for significant traditional cultural and spiritual sites in the project area. These sites must be protected from development impacts. Working with the tribes requires affirmative action on the part of BLM. Sending letters is not adequate to ensure tribal participation in identifying and protecting cultural resources. The BLM should visit with the tribes, should arrange field trips including providing transportation and compensation. The BLM must not ignore its trust duties to the tribes and its duties under the National Historic Preservation Act. Please list in the EIS the specific steps that were taken to solicit the input of the Tribes.

12-48 In sum, we urge the BLM to do all it can to protect the wildlife, water and air quality, scenic values and recreational opportunities in the South Baggs area. We ask the BLM to change its emphasis from encouraging and facilitating industrial development to conserving the dwindling natural resources. The BLM has an opportunity and a duty to creatively utilize natural gas development in a manner that minimizes impacts to other resources. WOC asks that the BLM seize that opportunity rather than continuing with the business as usual "open for business" rubber stamp approach to mineral development. Thank you for considering our comments.

Sincerely,

Caroline Byrd

Caroline Byrd

Sage Grouse

12-40 Throughout its range in the West, the decline of sage grouse is occurring at an alarming rate. As the current sage grouse studies point conclusively to the decline in numbers and distribution of sage grouse throughout its range, there is a real possibility that a petition to list the grouse under the Endangered Species Act will be submitted in the near future. Gas development including well-field roads, well pads and associated noise can easily cause abandonment of a sage grouse lek and its associated breeding grounds. Once a lek is abandoned, the sage grouse do not necessarily begin anew: most likely they will simply perish. As more wells, pipelines and other infrastructure are constructed without appropriate buffer zones, it will become more and more difficult to impose any necessary controls on a positive basis.

12-41 The BLM should prohibit surface disturbance within 2 miles of a lek and should field survey each lek to determine where in fact the birds are nesting. It may well be that 2 miles is not enough and that further protection is warranted. The BLM should also consider sage grouse mitigation in addition to buffer zones such as limiting the noise of compressors, discharging engine pumps and modifying livestock grazing.

12-42 Moreover, the BLM has a duty to know and disclose the effects of oil and gas development on sage grouse. Intuitively, it seems that gas development would significantly affect sage grouse breeding, nesting and chick rearing. The BLM should know exactly what the impacts of this development will be including the impacts of noise on sage grouse.

Mountain Plover

12-43 Now that the U.S. Fish and Wildlife Service (FWS) has proposed the mountain plover for listing under the Endangered Species Act, the BLM must both consult with the FWS and use the current survey guidelines for mountain plovers. The timing of well pad preparation and subsequent drilling activity should protect nesting plovers. Plovers drawn to the cleared off well pad as a nesting site should not be later threatened or destroyed by development activity. The BLM should fashion mitigant protective measures for the plovers. The Final EIS must direct more attention to the impacts on plovers, and on prairie dog towns, and how they will be protected.

Pronghorn and Mule Deer

12-44 WOC is very concerned about the loss of crucial big game winter range. Winter range is one of the most limiting factor for deer and antelope. The loss of crucial winter range will have long term devastating effects on wildlife. Given that about 50 percent of the project area is crucial winter range, it's hard to believe the DEIS's conclusion that this project will result in no significant direct, indirect, or cumulative impacts. The BLM must support this statement with accurate, up-to-date data. Wildlife and hunting opportunities are valuable resources in the project area. The BLM should develop an alternative that protects crucial winter

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VIA FACSIMILE AND MAIL

Larry Jackson, Project Coordinator
Rawlins Field Office
Bureau of Land Management
P. O. Box 2407
Rawlins, WY 82301-2407

Re: EPA Comments on DEIS for South Baggs Natural Gas Development Project

Dear Mr. Jackson:

Pursuant to the May 21, 1999 Federal Register Notice and in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act (CAA), Region VIII of the U. S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the South Baggs Area Natural Gas Project. Based on that review, EPA has proposed comments that should be addressed in the Final Environmental Impact Statement (FEIS).

The DEIS analyzes the potential environmental impacts of expanded natural gas development in the South Baggs Natural Gas Production Area, located in Carbon County, approximately 3 miles west of Baggs, WY. The project is proposed by Mark Energy Company (Mark) of Dallas, TX. The project area covers approximately 15,360 acres (10,607 Federal, and 2,320 private surface). Mark has proposed to drill and develop 80 natural gas wells in the project area over the next ten years. There will be additional development activities including access roads, pipelines, and ancillary facilities. One compressor station would be constructed under all alternatives. The relative surface disturbance in the project area is 275 acres, including 88 acres of roads, 45 acres of pipelines, a 3-acre compressor site and meter stations, and

[illegible] acres of resource mining. Approximately 165 acres of the 275 acres are being reclaimed. The proposed action would add 294 acres to existing disturbance for a total of 404 acres (assuming that the reclamation of 165 acres is successful).

The DEIS evaluates four alternative actions: 1) Shell's proposal for 80 wells; 2) Alternative A, drill and develop 40 new wells; 3) Alternative B, resource development of 80 new wells; and 4) No Action, defined on page 2-26 as deny the proposed action. But, case-by-case development would be allowed using Application for Permit to Drill (APD) and right-of-way (ROW) analyses.

Potential Impacts and Mitigation. The South Baggs DEIS provides an analysis of the potential impacts associated with continued natural gas development in this area of Wyoming. Table 2-4 on pages 2-41 to 2-45 and Chapter 4 provide analysis of potential impacts associated with this gas development project. This Table 2-4 and Chapter 4 assume effective implementation of project-wide mitigation measures presented in Section 2.1.4 (Project-Wide Mitigation Measures and Procedures). These measures, plus those contained in Appendix A (Standard Mitigation Guidelines) and Appendix B (Stipulation Recommendations), are considered adequate to avoid or minimize environmental harm. The BLM Authorized Officer (AO) is assigned the responsibility of making site-specific mitigation determinations on a case-by-case basis. There are a number of potentially significant impacts associated with this gas development project including air quality degradation, water quality impacts, soil erosion, wildlife displacement, and wetlands impacts should any of the proposed mitigation measures fail to the level of performance currently assumed.

13-1 EPA recommends that BLM develop an Adaptive Environmental Management Plan (AEMP) to be incorporated into the Final EIS (FEIS) as a method of verifying implementation, measuring the success rate of proposed measures, and making appropriate modifications to mitigation measures based on actual performance. This AEMP concept is discussed further in our attached detailed comments.

Air Quality Concerns. We are pleased that a comprehensive air quality analysis of gas development projects, including Continental Divide/Wamsutter II and South Baggs, was prepared to disclose the potential direct, indirect, and cumulative impacts of these projects and other exploration sources in the cumulative impact assessment area. The cooperative effort of preparing an analytical protocol was very useful in ensuring multi-interest participation. Because of the significance of this modeling work in relation to the Southwest

Thank you for the opportunity to review and comment on the South Baggs Area Natural Gas Development Project. Attached are detailed comments for your consideration in preparation of the FEIS. If you have any questions about our comments on this DEIS, please call me at [illegible], or Mike Brinky, the Project Review Coordinator, at [illegible].

Sincerely,

Cynthia Giley, Chief
NEPA Unit
Ecosystem Protection Program

Enclosure

cc: Larry Svoboda, EPA
John Haley, NPS
Terence Shea, USDA-FS

Wyoming Technical Air Forum air modeling protocol, the Air Quality Technical Report and the CALMET/CALPUFF model applications must be technically sound. We have some concerns about the assumptions and methods used in the modeling as noted in the attachment. These concerns have already been discussed with the BLM in a conference call on July 20, 1999. After reviewing the DEIS, the Air Quality Assessment Technical Support Document and the modeling files for the Far-Field Analysis, it is apparent that some visibility degradation in Class I Areas of the modeling domain will occur due to emissions from the gas well development at Continental Divide/Wamsutter II and South Baggs. The actual amount of degradation to be expected is unknown at this time due to the need for clarification of assumptions and methods. However, on page 27, Table 3-4 of the Air Quality Technical Support Document (Far- Field Analysis) indicates that potential visibility degradation on greater than 0.5 deciview level ranges from 8 days at the Bridger/Teton Wilderness to 1 day at the Flaming Gorge Wilderness. The amount of potential degradation from the South Baggs Production Area is not separately displayed. The range of potential impairment of visibility in Class I areas is not fully discussed in the DEIS. Instead the DEIS uses Table 3-6 from the Air Quality Technical Report as the basis for the air quality discussion. This Table 3-6 appears in the DEIS, Appendix D, as Table D-3 and is the proponents' preferred method of displaying the potential visibility degradation. This Table D-3 presents the minimum number of days of potential degradation.

13-2

13-3 Because of the potential for visibility degradation in Class I Areas, the cost and effectiveness of mitigation measures needs to be addressed in the Final EIS. The public and the decision-maker have insufficient information to support a decision on mitigation measures to offset potential degradation of visibility due to gas development in this part of Wyoming. As noted above,

13-4 mitigation measures selected to address air quality concerns should also be monitored, evaluated, and modified under a formal Adaptive Environmental Management Plan (AEMP).

Rating. Based on EPA's national rating system, the South Baggs Area Gas Development Project DEIS will be listed in the Federal Register as category EC-2, Environmental Concerns, Insufficient Information. This rating means that EPA has identified environmental concerns with the potential impacts of the proposed project and the mitigation measures.

[illegible]

[illegible]

13-5 Rather than depend on a communication process between BLM and Operators to ensure adequate mitigation measures are implemented for the South Baggs Gas Project, EPA recommends that BLM develop a formal Adaptive Environmental Management Plan (AEMP) to be included in the FEIS as the method to verify the efficacy of proposed mitigation measures.

An AEMP is a process to increase the speed at which managers learn from their decisions about resources and how development activities affect them. The process generally consists of several basic steps including: a) defining the natural resource protection objectives; b) identifying the anticipated and environmentally favorable; c) monitoring of ecosystem responses to generate feedback; d) using past experience; e) including multiple stakeholders; f) documenting information and actions; and g) adjusting management practices based on learning experiences. For further information on AEMP, please see R. A. Carpenter, "The Case for Continuous Monitoring and Adaptive Management Under NEPA", in Environmental Policy and NEPA, R. Clark and L. Canter, ed., St Lucie Press, 1997, pages [illegible].

We understand that an AEMP can have differing levels of effort and costs. Generally, there are three possible options featuring inactive, passive, or active. The following is a suggested budget and organizational outline for these different levels of AEMPs:

A) "Inactive Management" Plan, the least cost option:

Organizational Arrangements. Establish one inter-agency informal work group consisting of BLM and cooperating agencies' scientists and natural resource economists.

Process. Provide a small budget and resources needed to monitor selected key ecosystem indicators managed by the inter-agency work group.

Independent Science Review. Proposed plans and actions could be made available to various stakeholders. These stakeholders could require

independent scientific review and provide this information to the inter-agency work group.

Public Access and Review. Provide key documents in draft form to interested stakeholders.

B) "Passive Management" Plan, most mid-level cost option:

Organizational Arrangements. Establish two technical work groups: 1) An inter-agency technical work group of BLM and cooperating agencies' scientists and natural resource economists; and 2) An extra-agency work group of independent scientists and natural resource economists.

Process. Make various management documents, including monitoring of environmental conditions and proposed resource management plans, available for scientific review when developed in a draft stage. Direct the extra-agency scientists' work group to independently propose monitoring of unspoiled conditions and means to determine if such conditions remain unspoiled.

Independent Science Review. Seek peer-based peer review to be managed by the Natural Resources Committee of the National Academy of Sciences. Provide budget for work of the extra-agency science work group.

Public Access and Review. Provide key documents in draft form to interested stakeholders and hold subsequent public meetings at critical decision points.

C) "Active Management" Plan or the high cost option:

Organizational Arrangements. Establish three technical work groups: 1) An inter-agency technical work group of BLM and cooperating agencies' scientists and natural resource economists; 2) An extra-agency work group of independent scientists and natural resource economists; and 3) A science center of contracted specialists in the environmental sciences and the natural resource economists.

Process. Make various management documents including monitoring of environmental conditions and proposed resource management plans available for scientific review when developed in a draft stage. Direct the extra-agency scientists' work group to independently propose monitoring of unspoiled conditions and means to determine if such conditions remain unspoiled. Assure the science center staff conducts scientifically

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peer-reviewed reports on the effectiveness of mitigation measures to achieve the non-degradation and restoration objectives.

Independent Science Review. Obtain scientific peer review managed by the Natural Resources Committee of the National Academy of Sciences. Budget and implement the work of both the extra-agency science work group and the permanently established science center.

Public Access and Review. Provide key documents in draft form to interested stakeholders and hold frequent, perhaps quarterly, public meetings to maintain an ongoing interaction with the public in all aspects of managing the South Baggs Gas Development Project.

We recommend that the Final EIS outline the various adaptive management options including strength and benefits of these options. The Preferred Alternative should contain the manner of an effective and efficient AEMP including the involvement of multiple stakeholders, available budgets, meeting frequencies, and the use of independent scientific review of mitigation measures. A selection of an AEMP should be mentioned in the Record of Decision.

AIR QUALITY

13-6 EPA has completed an analysis of the air quality modeling approach and results discussed in the Technical Report and DEIS. Regardless of methods selected (METHOD 2 or METHOD 4) to indicate the potential for visibility degradation in Class I Areas of the modeling domain, there is a high potential for degradation. Therefore, effective mitigation measures need to be defined to off-set this potential degradation. The following comments are specific to the Technical Support Document and the CALMET/CALPUFF Model.

Technical Support Document

13-7 1. Page 6, Winter Scaling Factor. The Winter Scaling Factor and the Non-winter Scaling Factors for the Jonah wells are significantly lower than for other fields. Please explain this difference and how the factor will affect well emissions.

13-8 2. Page 39, Third Paragraph. Please explain the reason for excluding the transmissometer data on December day (Julian Day 146) at Bridger, Fitzpatrick, and Pape Agin. What type of "weather" was occurring ? How does excluding a data point on an uncommon day contribute to adequate

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characterization of conditions and impacts?

13-9 3. Page 39, "Number of Invalid Days". As shown in this Table, the number of invalid days for the transmissometer data was approximately 20% of the year. This information should be included in the FEIS as a factor that could lead to an underestimation of potential impacts.

CALMET/CALPUFF MODELING CONCERNS

13-10 4. MM5 Predicted and Observed P. adjustment Data. The CD/WE, South Baggs documentation states that both observed and MM5 predicted precipitation data were used in CALMET to generate the precipitation fields. The MM5 precipitation patterns and amounts likely don't match the observed values. Specifying both of these data sources as input to CALMET can potentially result in double counting of the precipitation. This would a remote the wet scavenging of pollutants and underestimate the concentration and visibility impacts at sensitive receptor areas. If MM5 predicted precipitation estimates are to be used, then they must be evaluated against the observed values to justify their use.

13-11 5. Kinematic Effects Treatment. The CD/WE, South Baggs CALMET modeling did not specify the options to model kinematic effects such as blocking, deflection and channeling of wind flow by complex terrain. Please provide justification for the failure to consider these effects in the CALMET model.

13-12 6. Incomplete Meteorological Database. The CD/WE, South Baggs CALMET modeling used less than half the available observed surface meteorological data for the study area. Such data are available in the SFWYTAF database prepared by Air Resources Specialist for CALMET modeling. The Rawlins Automatic Weather Station (RAWS) and the Wyoming Department of Transportation sites were excluded. The justification was that these data were not collected for the specific purpose of modeling. However, such data were used in the Mount Zirkel Visibility Study and other CALMET modeling studies in the region. The standard National Weather Station (SWS) data used in the CD/WE, South Baggs CALMET modeling were not collected for modeling. The CD/WE, South Baggs CALMET modeling should use all data available and provide specific, defensible rationale for any data exclusion.

13-13 7. Puff Splitting. One of the greatest technical limitations of CALPUFF for far-field modeling in complex terrain is using a constant wind to advect the puff despite the horizontal grid cell extent of the puff and wind

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variability in vertical layers. CALPUFF's puff splitting algorithm to partly address this issue. During periods of high wind shear, the puff is split to allow two portions to be advected in different directions. The CD/WE, South Baggs modeling does not turn the puff splitting option. Please provide adequate justification for not using this option.

13-14 8. PM10 Dry Deposition. A geometric mean diameter of 10 microns with a 0 microns standard deviation was specified as input to CALPUFF for calculating PM10 dry deposition rates. PM10 species represents all particulate matter components from 0 to 10 microns. The treatment of all PM10 species as having a geometric mean diameter of 10 microns greatly overstates the average size of the PM10 particles. The particle size distribution can be estimated using EPA's "Compilation of Air Pollutant Emission Factors, AP-42", Chapter 13. Please provide justification for the use of a geometric mean diameter of 10 microns with a 0 microns standard deviation.

13-15 9. Background Ammonia. The CD/WE, South Baggs CALPUFF modeling used a background ammonia concentration of 10 ppb. High terrain ammonia measurements from the Mount Zirkel Visibility Study suggests that a maximum value of approximately 1 ppb is more appropriate. In addition, the Interagency Workgroup on Air Quality Modeling (IWAQM) Phase 2 Report suggests a background ammonia concentration of 1 ppb for arid lands. Please provide a rationale for the use of the 10 ppb in modeling.

13-16 10. Relative Humidity. It appears that day-specific 200m vertically averaged relative humidity predictions from the MM5 model were used in both the METHOD 2 and METHOD 4 visibility calculations. If MM5 predicted relative humidity (RH) is used in the visibility assessment, it must be evaluated against the observed values to determine accuracy and appropriateness.

13-17 11. METHOD 2. This Method 2 for calculating visibility impacts is reported as a recommended IWAQM method. However, the CD/WE, South Baggs METHOD 2 approach used MM5 predicted 200m vertically averaged relative humidity values rather than IMPROVE site surface seasonal values recommended by IWAQM. Surface relative humidity will be higher than what a humidity shift as the vertical averaging of relative humidity will underestimate the CALPUFF extinction estimation due to new sources.

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SECTION 5:

RESPONSE TO COMMENTS

SECTION 5: RESPONSE TO COMMENTS

Responses to comments are organized by responder and are numbered in the order received. Page and section numbers, unless otherwise noted, refer to the draft EIS issued in May 1999.

COMMENT LETTER 1: DEPARTMENT OF THE ARMY, CORPS OF ENGINEERS

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 1-1. BLM recognizes that the Corps of Engineers and the U.S. Environmental Protection Agency are responsible for making jurisdictional determinations for the purposes of Section 404 of the Clean Water Act (CWA). As stated in the DEIS, the large areas of wet meadow, shown on the Little Snake River alluvial bottomlands, are not jurisdictional since they are solely supported by artificial flood irrigation. This determination was made by on-site investigation. Also, as stated in the DEIS, wetland investigations within the project area were performed in support of, but do not replace, site specific jurisdictional wetlands inventories necessary for CWA 404(b)(1) compliance. Mitigation measures committed to by Merit (Chapter 2) include compliance with Section 404(b)(1) guidelines of the federal CWA.

Comment 1-2. Thank you for the update on General Permit 98-08.

COMMENT LETTER 2: WILDLIFE MANAGEMENT INSTITUTE

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 2-1. Cumulative impacts for all potentially affected resources are addressed in the DEIS, Chapter 4 (Analysis of Environmental Consequences). Cumulative impacts to wildlife are discussed specifically in Section 4.7.5 of the DEIS. Also, a summary of cumulative effects is provided in Chapter 2 (Proposed Action and Alternatives), Section 2.6.2 (Summary of Cumulative Effects). Table 2-4 provides a comparative impact summary of the Proposed Action and alternatives.

Comment 2-2. The Proposed Action is the proposal put forth by the Operator because it is their proposed development. The BLM does not make the initial proposal for development, as it is not in the business of recovering and marketing oil and gas resources. Rather, the BLM is charged with evaluating development proposals within the legal mandates of allowing mineral recovery while affording appropriate protection to the environment. The BLM and others, during scoping, proposed alternatives to the Proposed Action. Reasonable alternatives, including the No action Alternative, receive the same consideration as the Proposed Action. Without a proposal, evaluating development through out the whole of southwest Wyoming and northwest Colorado must be considered unreasonable. It must be pointed out that NEPA requires that significant impacts including cumulative negative impacts be disclosed. NEPA does not require that a proposal be denied because of these impacts.

Comment 2-3. The BLM will consider your comment during preparation of the Record of Decision (ROD) for this project.

Comment 2-4. The main outdoor recreation activity in the EIS area is hunting, and hunting may be the only recreation activity that can be monitored. There is no conclusive evidence that oil and gas development has had significant impacts to big game herds; however, the DEIS indicates that significant indirect impacts could occur to big game herds even with the implementation of standard mitigation measures(see DEIS Section 4.7.6). Rather, big game numbers are regulated primarily by natural forces, especially the weather, and by harvest quotas set by WGFD. The WGFD currently monitors the big game herds in the state and identifies factors that may be limiting. Pronghorn numbers, for instance, vary considerably from year to year and can usually be linked to climatic conditions or management decisions. Standard mitigation for big game would be implemented regardless of monitoring findings; however, additional mitigation may be developed and implemented based on monitoring results.

Comment 2-5. Data on big game use of the area for the level of analysis you are suggesting are not available and it is, therefore, necessary to make the best professional judgements possible from utilizing the data which are available. Wyoming Game and Fish Department deer survey data for the winter of 1997 show that the maximum number of animals found on and proximal to the 12,352-acre project area at any one time was 305 deer on February 7. This translates into a maximum deer density of 0.025 animals per acre on the project area (305/12,352 = 0.02469). The deer density of 0.072 that was used in calculating impacts in the DEIS is nearly three times greater than the maximum density of deer observed on the project area and, therefore, represents an extreme, worst-case scenario that errors in favor of the deer. See Table 4-4 on page 4-50 of the DEIS.

The bottom line is that the Proposed Action would result in the post-reclamation disturbance of 99.4 acres of Mule Deer Crucial Winter Range. In the absence of any other estimate or standard for measuring impacts to big game, BLM is using the best information available.

It would be more representative to look at maximum deer densities within the specific boundaries of the project area to see what maximum impacts might be for the removal of a given amount of acreage of Crucial Winter Range.

There is just as much above average CW habitat as below average CW habitat within the project area so disturbance estimations should compensate or average out. In the absence of a map detailing which portions of the CW range are above or below average during which kinds of weather, an average is utilized.

By definition CW range are those areas most critical for animals survival during the most severe winter.

Comment 2-6. The BLM will consider your comment during preparation of the Record of Decision (ROD) for this project.

COMMENT LETTER 3: NATIONAL PARK SERVICE

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

COMMENT LETTER 4: UNITED STATES DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 4-1. Applicant-committed mountain plover survey protocol have been included in the FEIS. Survey protocol were not included previously because the draft document was prepared prior to mountain plover being identified as a proposed species for listing. Survey protocol to be used are the current USFWS survey methods. Formal conferencing with the USFWS regarding impacts to mountain plover has been initiated and additional standards may be applied based on conference results. Conference results will be identified in the ROD for this project.

Comment 4-2. Formal consultation for threatened and endangered species and conferencing for proposed species was requested on November 19, 1999. See also comment response for #4-1 above.

Comment 4-3. In order to maintain consistency with USFWS recommendations and buffer zones identified in the Continental Divide/Wamsutter II EIS, and the Green River RMP, buffer zones for bald eagles, peregrine falcons and ferruginous hawks will encompass a radius of one mile. Buffer zones for all other non-listed raptor species will encompass a radius of one half mile.

Comment 4-4. Comment noted.

Comment 4-5. Since the USFWS did not accept the DEIS as satisfying the requirement of the Biological Assessment (BA), the concern raised in the comment will be addresed with mitigations in the BA which is being prepared.

Comment 4-6. Please refer to comment response 4-3 above.

Comment 4-7. Comment noted.

Comment 4-8. The description of the habitat and its suitability for and use by sage grouse will be more fully explained in the BA. While sagebrush habitats dominate 75% of the project area, many years worth of surveys by both Wyoming Game and Fish Department biologists and BLM biologists, as well as transect data designed to detect sage grouse use of the area, reveal that sage grouse use of the area is extremely limited, if used at all. The BA will reflect this updated description of the area.

Comment 4-9. Historic lek searches in the project area reveal that sage grouse use of the area is extremely limited at best. No leks have been identified within the project area, and no nesting or winter use of the area has been detected over the past several years.

Comment 4-10. Comment noted.

Comment 4-11. The biological assessment will quantify a projected water use figure for the project area. We will assume that this amount is a depletion and consult informall/formally with the USFWS on the results.

Comment 4-12. Standard mitigation guidelines for the Great Divide Resource Area RMP-ROD specify a buffer of 500 feet between surface disturbances and surface water and/or wetland/riparian areas. Except for Red Creek, stream channels in the project area are ephemeral and do not provide sufficient hydrology for wetlands to develop.

The intent of the statement on page 4-39 of the DEIS is to demonstrate that wetlands will be avoided where possible and that the operator and BLM will work with the COE to mitigate/compensate any impacts that are unavoidable. If unavoidable impacts occur, mitigation plans will be developed on a site by site basis in consultation with the COE.

Comment 4-13. Appendix B of the DEIS specifies reclamation recommendations. Reclamation objectives are outlined (both short- and long-term) as well as seed mixtures for four different habitat or community types. These community types are; 1) mixed desert shrub, badlands, and juniper woodlands community type, 2) moist alkaline areas in the mixed desert shrub community, 3) greasewood dominated valley bottoms and bluffs, and 4) wet meadow community types. Performance standards for the short and long term objectives are specified for all years, the second year and five years after reclamation.

Comment 4-14. Comment noted. The BLM believes that cumulative impacts have been adequately addressed in this EIS. The results of the southwest Wyoming evaluation indicate that an EIS analyzing the cumulative impacts of oil and gas development in southwest Wyoming is unnecessary.

Comment 4-15. Please refer to comment responses 4-1, 4-3, 4-8, 4-9 and 4-11.

COMMENT LETTER 5: OFFICE OF FEDERAL LAND POLICY

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS

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Comment 5-1. The overlap of the CALPUFF modeling domains and the use of the same modeling techniques in both studies was very clearly and openly discussed at the protocol meeting with WDEQ-AQD's full knowledge and participation. In addition, the WDEQ-AQD gave the Bureau written permission to release the MM5 data produced under the SWWYTAF study (Olson 1998). Given the location and nature of both modeling studies, it is not surprising that

some of the same information was used in both studies. However, no proprietary SWWYTAF information was used in the South Baggs project air quality impact analysis.

Comment 5-2. See response to comment 7-1.

Comment 5-3. See response to comment 6-2.

Comment 5-4. Comment noted.

COMMENT LETTER 6: WYOMING STATE GEOLOGICAL SURVEY

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 6-1. Thank you for pointing out this error. The text on pages 1-3, 1-4, and 2-19 of the FEIS has been corrected to reflect the proper spelling of Mesaverde Formation or Group.

Comment 6-2. Comment noted.

Comment 6-3. Comment noted.

COMMENT LETTER 7: WYOMING GAME AND FISH DEPARTMENT

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 7-1. The Wyoming Game and Fish Department was sent a scoping statement when the project was first announced. BLM received your comments in February of 1996, and they were used in defining the issues addressed in the DEIS. *"Gary Holsan Environmental Planning"*, the contractor for this project and his subcontractors, have been in contact with the local WG&F biologists while the DEIS was being prepared. Most of this interaction took place in the early part of the project prior to when the DEIS was released for comment. There has been a long delay with this project while the issue of air quality was addressed. During this delay, little additional communication between BLM and the WGFD occurred. Communications with the WGFD have since been re-established for WGFD input into the preparation of a biological assessment being required by the USFWS.

Comment 7-2. Merit Energy Company, the South Baggs project proponent, has assured the BLM that 50 well is all the wells they plan to drill in the next ten years. Alternative "B" addresses a maximum development scenario of 90 wells. This is a 80 percent increase over the 50 wells analyzed in the proposed action. If unforseen circumstances should arise that would make the drilling of more then 50 wells necessary, then the analysis of the 90 well scenario could be used to make a determination if additional development beyond the 50 well scenario was warranted.

Comment 7-3. Impacts produced by the construction of roads were factored into the estimated disturbance for each well site. See Section 4.7.3.1, Paragraph 1, last sentence in DEIS (P.4-46) where it states that: "-- the analysis of impacts to wildlife for this alternative is based on an average density of 2.60 new well pads per section with an associated disturbance of 5.85 acres per well site, which includes 3.25 acres for the pad and 2.6 acres for associated roads and pipelines.

Impacts to big game were broken into four subsections consisting of: (1) Surface disturbance that impact forage resource, (2) Potential for displacement impacts associated with drilling activities and traffic, (3) Vehicle collisions, and (4) Poaching and general harassment. Disturbance to big game on the winter range and in general was described under subsections 2,3, and 4 for each species and for each of the three action alternatives. For example, see p. 4-51, paragraphs 4 and 5; p. 4-52, first full paragraph for description of impacts to pronghorn under the Proposed Action.

Comment 7-4. Wyoming Game and Fish Department district biologist Tim Wooley's deer survey data for the winter of 1997 show that a maximum number of animals found on and proximal to the 12,352-acre project area during partial counts was 305 deer on February 7. Tim Wooley estimates that the total number of deer using the area during a hard winter could be three times this number (915). This translates into a maximum deer density of 0.074 animals per acre on the project area (915/12,352), which is essentially the same as the density of 0.072 that was used in calculating impacts in the DEIS. As stated in the DEIS, this density number was used to represent the maximum density of deer during an extreme or worst-case scenario, and errors in favor of the deer. See Table 4-4 on page 4-50 of the DEIS. Hand-picking a maximum temporal concentration of deer to represent the overall winter range on the project area is not a reasonable or representative way to estimate deer densities for a unit of range because the animals move constantly and the concentration or density level shifts accordingly. It is more representative to look at maximum deer densities within the specific boundaries of the project area to see what maximum impacts might be for the removal of a given amount of acreage of Crucial Winter Range.

The bottom line is that the Proposed Action will result in the post-reclamation disturbance of 99.4 acres of Mule Deer Crucial Winter Range.

We are not sure where in the DEIS you are referencing when you comment that the EIS should more accurately disclose the time it would take for reclamation benefits to be realized. Under section 4.5.4 Impacts Summary, on page 4-39 of the DEIS, the comment is made that revegetation of the disturbed areas would likely take 20 to 30 years for the mixed desert shrub community type. Again under section 4.5.7. Residual Impacts, on page 4-41 of the DEIS, it states "[r]evegetation of "predisturbance" conditions would require 30 years or more...." While the drilling phase is analyzed over a 10-year development period, it is stated that the benefits of reclamation will not be realized for many years after the drilling phase is completed.

Comment 7-5. Unless construction activities were continuous and extended over the entire Poison Basin area throughout the migratory period, mule deer movements are not likely to be curtailed. A study of the effects of winter 3D seismic operations on mule deer distribution and movements on the Birch Creek Allotment in Western Wyoming found that intensive activities

involving blasting and a ground crew displaced, for short distances, deer that were migrating into the area, but that seismic operations were not impeding mule deer migratory movements through the area (HWA 1994).

Comment 7-6. See response to comment 7-4.

Comment 7-7. Cheatgrass is identified as an exotic species in Chapter 3, section 3.5.1 (page 3-35 paragraph 4). By implementing mitigation provided in Chapter 2 (Section 2.1.4.2.8, *Vegetation and Wetlands*), weeds will be kept to a minimum. Appendix "B" (Section 4.5, Monitoring and Maintenance) provides a monitoring program that include noxious weed invasions.

Comment 7-8. Thank you for pointing out this error. The text on page 3-46 of the DEIS has been corrected to reflect the Bitter Creek Road as the western boundary of the Baggs Mule Deer Herd Unit.

Comment 7-9. Comment noted.

COMMENT LETTER 8: STATE OF WYOMING, DEPARTMENT OF ENVIRONMENTAL QUALITY

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 8-1. Responses to specific comments on the South Baggs DEIS and the supporting Air Quality Impact Assessment Technical Support Document are addressed below. Comments on the Continental Divide/Wamsutter II DEIS and its supporting Air Quality Impact Assessment Technical Support Document are addressed in the Continental Divide/Wamsutter II Final EIS.

Comment 8-2. The Bureau regrets any confusion it caused by referring to the Savage Run Wilderness Area as a PSD Class II area.

Under the Federal Clean Air Act (42USC7472), all international parks, national wilderness areas and national memorial parks over 5,000 acres, and national parks over 6,000 acres in existence on August 7, 1977, were designated as mandatory Federal PSD Class I areas. All other areas classified as either "attainment" or "unclassified" pursuant to the National Ambient Air Quality Standards were designated as PSD Class II areas. A formal process for redesignation of PSD Class II areas to either Class I or Class III was also defined (42USC7474). The Federal visibility protection goal and requirements (42USC7491 and 7492) are applicable only within mandatory Federal PSD Class I areas. In addition, mandatory Federal PSD Class I areas may not be redesignated, although the spatial extent may vary if the original area's boundary is modified (i.e.; wilderness area boundary expansions, etc.)

Under the State of Wyoming Air Quality Standards and Regulations (Section 24(c) Prevention of Significant Deterioration), all national parks, national wilderness areas, and national memorial

parks in Wyoming (regardless of size) as of January 25, 1979, were designated Class I and may not be redesignated. Among other preconstruction permit application requirements, the State of Wyoming requires that an analysis be conducted of potential impairment to visibility, soils and vegetation having significant commercial or recreational value, and other associated growth that would occur.

Since the Savage Run Wilderness Area was established under the Endangered American Wilderness Act of 1978 (P.L. 95-237, dated February 24, 1978), and has not been redesignated as prescribed in the Federal Clean Air Act (42USC7474), it is a Federal PSD Class II area and a State of Wyoming Class I area. Similarly, since the Cloud Peak, Encampment River, Gros Ventre, Huston Park, Jedediah Smith, Platte River, Popo Agie, and Winegar Hole Wilderness Areas were established under the Wyoming Wilderness Act of 1984 (P.L. 98-550, dated October 30, 1984), they are all Federal and State of Wyoming PSD Class II areas.

As clearly stated in the DEIS (Executive Summary, Page S-5) "BLM approved activities must comply with all applicable local, state, tribal and Federal air quality laws, statues, regulations, standards and implementation plans ..." Therefore, Bureau approved activities are required to conduct an analysis of potential visibility impairment within the Savage Run Wilderness Area under State of Wyoming regulations, even though the National Visibility Goal and Regulations are not applicable. In addition, potential air quality impacts within the Savage Run Wilderness Area would be limited by applicable Federal PSD Class II increments and State of Wyoming PSD Class I increments.

Both the FEIS text (2.6.2 Summary of Cumulative Impacts, 3.2.2 Air Quality, 4.2.5 Cumulative Impacts, Appendix D, Table D-1, and Table D-3) and the Revised Air Quality Impact Assessment Technical Support Document text (Executive Summary - Pages ii and iii, Volume I - 1.0 Introduction, Volume II - 1.0 Introduction, Figure 1-1, and Table 5-3) have been revised to clarify the status of the Savage Run Wilderness Area as recommended.

Comment 8-3. The FEIS text (3.2.2 Air Quality and Table 3-6) and the Revised Air Quality Impact Assessment Technical Support Document text (Volume I - Tables 5.1, 5.6 and 5.13) have been revised to clearly indicate the new ozone standard.

Comment 8-4. As clearly stated in the DEIS (Executive Summary, Page S-5) "BLM approved activities must comply with all applicable local, state, tribal and Federal air quality laws, statues, regulations, standards and implementation plans ..." and "... there is no applicable state or Federal regulatory visibility standards."

The Clean Air Act does require Federal land management agencies to exercise their "affirmative responsibility" to protect the air quality related values (including visibility) within mandatory Federal PSD Class I areas, indicating to the appropriate air quality regulatory agency whether a specific proposed facility would have an adverse impact on such values (through Federal land manager participation in the New Source Review process). For the limited purposes of the PSD Permit review, it is appropriate for the Federal land management agency to select any significance threshold (or Limit of Acceptable Change) necessary to meet their policy requirements. Since a Limit of Acceptable Change is neither a regulatory limit nor regulatory standard, it's exceedance alone would not violate any local, state, tribal and Federal air quality

regulatory requirement.

Where there is no applicable regulatory visibility standard or threshold, NEPA directs the preparing agency to determine and disclose an appropriate impact significance threshold using "... existing [relevant] credible scientific evidence ..." based on "... theoretical approaches or research methods generally accepted in the scientific community." The DEIS compared potential visibility impact analysis results to both the 1.0 deciview "just noticeable change" significance threshold level (based on best science) and the USDA-Forest Service "½ of a just noticeable change" 0.5 deciview Limit of Acceptable Change (based on their own policy).

Although the USDA-Forest Service has no authority to require any agency use its policy based Limit of Acceptable Change for any purpose, the Bureau chose to analyze and report potential visibility impacts using the USDA-Forest Service values for disclosure purposes only. Certainly any organization may select any other significance level for their own purposes, and the Bureau agrees that selecting a visibility threshold of significance less that 1.0 deciview would be more restrictive, but not generally perceptible. Also see responses to comments [6-A11], [7-A2], and [7-A4].

Comment 8-5. See response to comment 5-1.

(Comments on the Draft Environmental Impact Statement)

Comment 8-6. See response to comment 8-3.

Comment 8-7. See response to comment 8-2.

Comment 8-8. See response to comment 8-3.

Comment 8-9. The FEIS text (4.2.3.3 Alternative B and Appendix D) and the Revised Air Quality Impact Assessment Technical Support Document text (Executive Summary and 1.0 Introduction) have been revised as recommended.

Comment 8-10. The FEIS text (3.2.2 Air Quality) has been revised to indicate there are no applicable hazardous air pollutant, visibility impairment, or atmospheric deposition (acid rain) standards, and that the existing "reasonably attributable" and new "regional haze" visibility impairment regulations apply only within Federal Mandatory PSD Class I areas. However, as requested through the advisory stakeholder process, the Air Quality Impact Assessment analyzed potential visibility impacts at both PSD Class I and Class II sensitive areas. In addition, both the FEIS text and the Revised Air Quality Impact Assessment Technical Support Document (USDI-BLM 1999b) text have been revised to clarify the status of the Savage Run Wilderness Area as recommended. Also see response to comment 8-2.

Comment 8-11. The USDA-Forest Service has requested that all NEPA analyses be compared to their "½ of a just noticeable change" (0.5 deciview) Limit of Acceptable Change.

Comment 8-12. See response to comment 8-9.

Comment 8-13. The FEIS text (4.2.6 Mitigation Summary) has been revised to clearly indicate that the proposed South Baggs NO_x emission sources would not be included in the existing Rock Springs Field Office area tracking agreement, and that either a mutually acceptable revision or a separate agreement would be required to include those proposed emission sources.

Comment 8-14. See response to comment 8-10.

Comment 8-15. See response to comment 8-11.

Comment 8-16. The FEIS text (Appendix D) has been revised to clearly indicate that a reduction of NO_x emissions from existing sources in southwestern Wyoming is anticipated, primarily due to the installation of additional control devices on the Naughton coal-fired electrical generation facility.

Comment 8-17. The FEIS text (Appendix D) has been revised to indicate SWWYTAF is developing a secondary organic aerosol model, but it is not currently available for use.

Comment 8-18. See response to comment 8-9.

(Comments on Air Quality Technical Support Document - Volume I)

Comment 8-19. See response to comment 8-9.

Comment 8-20. See response to comment 8-2.

Comment 8-21. See response to comment 8-11.

Comment 8-22. See response to comment 8-2.

Comment 8-23. See response to comment 8-2.

Comment 8-24. See response to comment 8-9.

Comment 8-25. The Revised Air Quality Impact Assessment Technical Support Document text (Volume I - 2.5 Emissions Inventory - Cumulative Emissions Sources) has been revised as recommended.

Comment 8-26. See response to comment 8-3.

Comment 8-27. The Revised Air Quality Impact Assessment Technical Support Document text (Volume I - Appendix D1) has been revised as recommended.

(Comments on Air Quality Technical Support Document – Volume II)

Comment 8-28. See response to comment 5-1.

Comment 8-29. See response to comment 5-1.

Comment 8-30. See response to comment 5-1.

Comment 8-31. Method 1 is the original, Phase I IWAQM methodology. It has been replaced by Method 2.

Method 2 uses the mean of the 20% cleanest seasonal visibility conditions (extinction values reconstructed from two IMPROVE 24-hour fine particulate mass concentration samples per week), which were assumed to occur on every day during an entire season (a conservative assumption in predicting the frequency of visibility impacts). This method therefore inherently separates the meteorological conditions which occurred in determining the "cleanest" background, and those conditions applied in the modeling analysis. Unlike the IWAQM protocol, the South Baggs project analysis limited observed relative humidity levels to 90% (e.g.; 91-99% values were set to 90%).

Method 3 is the same as method 2, except predicted impacts are eliminated whenever the relative humidity (RH) exceeds the maximum allowed (RHMAX), rather than capping the RH at RHMAX, as in Method 2.

Method 4 compares directly observed hourly extinction values measured with an IMPROVE transmissometer, with hourly modeled extinction values calculated from the predicted primary and secondary particulate matter concentrations, adjusted for hourly relative humidity levels, interpreted on a daily basis.

There is also a Method 5, which is the same as Method 4, except it uses IMPROVE nephelometer data rather than transmissometer data.

Comment 8-32. See response to comment 8-11.

Comment 8-33. See response to comment 8-10.

Comment 8-34. See response to comment 8-11.

COMMENT LETTER 9: WYOMING DEPARTMENT OF STATE PARKS & CULTURAL RESOURCES - STATE HISTORIC PRESERVATION OFFICE

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 9-1 The need for the BLM and Operator to comply with State of Wyoming State Historic Preservation Office regulations is acknowledged in DEIS Table 1-3 and Section 2.1.4.2.15.

COMMENT LETTER 10: WYOMING STATE ENGINEER'S OFFICE

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 10-1 Thank you for your comment. The need for the Operator to contact the State Engineer's Office regarding surface and ground water utilization and surface discharge is acknowledged in DEIS Table 1-3 and Section 2.1.4.2.15.

COMMENT LETTER 11: USDA, FOREST SERVICE, ROCKY MOUNTAIN REGION

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 11-1. Responses to specific comments on the South Baggs DEIS and the supporting Air Quality Impact Assessment Technical Support Document are addressed below. Comments on the Continental Divide/Wamsutter II DEIS and its supporting Air Quality Impact Assessment Technical Support Document are addressed in the Continental Divide/Wamsutter II Final EIS.

Comment 11-2. The Bureau recognizes that the U.S. Congress established the National Wilderness Preservation System (P.L. 88-577, dated September 3, 1964) and specific Wilderness Areas (numerous subsequent laws, including P.L. 94-567, P.L. 95-237, and P.L. 98-550), and directed the appropriate Federal land management agency to administer those lands "... for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness ..."

The Bureau also recognizes that the U.S. Congress established procedures for the Prevention of Significant Deterioration of Air Quality (P.L. 95-95, dated August 7, 1977) "... to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value ..." and "... to insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources ..." Further, the U.S. Congress gave specific Federal land management agencies "... an affirmative responsibility to protect the air quality related values (including visibility) of any such lands within a class I area and to consider, in consultation with the Administrator, whether a proposed major emitting facility will have an adverse impact on such values ..." under the Preconstruction Requirements (New Source Review) of the Clean Air Act.

However, the U.S. Congress did not require that all Wilderness Areas either have, or achieve, pristine air quality conditions, nor did the U.S. Congress grant any Federal land management agency air quality regulatory authority. In fact, ever since the original Clean Air Act was passed (P.L. 159, dated July 14, 1955), it has been the declared policy of the U.S. Congress "... to preserve and protect the primary responsibilities of the States [Tribal] and local governments in

controlling air pollution ..."

In 1977, after considerable debate, the U.S. Congress did amend the Clean Air Act (P.L. 95-95, dated August 7, 1977) to address air quality on certain Federal lands by: 1) establishing 158 mandatory Federal PSD Class I areas where additional air pollutant levels above existing concentrations would be limited for specific pollutants (PSD Class I increments); 2) providing for Federal land management agency review and comment on major air pollutant emission source permit applications (Major Stationary Source - New Source Review); and 3) establishing the National Visibility Goal of "... the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution" (Clean Air Act Section 169A(a)1).

By establishing the PSD Class I increments for nitrogen dioxide, particulate matter and sulfur dioxide, the total concentration of these pollutants due to all non-temporary anthropogenic emission sources is restricted to a small level above legally defined baseline conditions. The U.S. Congress specified 158 areas as mandatory Federal PSD Class I areas, and provided a mechanism by which each applicable air quality regulatory agency could establish additional Federal PSD Class I areas. However, the only Class I redesignations since 1977 have been completed by four specific tribal governments. In addition, EPA regulations specified that baseline conditions be legally defined only after a "major stationary source" permit was submitted, often many years after 1977. Of the nearly 625 current Wilderness Areas (Landres and Meyer, 1998), only 120 are mandatory Federal PSD Class I areas. Therefore, over 500 Wilderness Areas have no special air quality regulatory status.

By providing for Federal land management agency participation is the New Source Review process, Federal PSD Class I area managers can exercise their "affirmative responsibility" to protect the air quality related values (including visibility) within their PSD Class I areas through review and comment on major air pollutant emission source permit applications, indicating to the air quality regulatory agency whether a specific proposed facility will have an adverse impact on such values. However, these reviews are limited to only those new emission sources (or modifications) which would result in either a 250 ton per year increase for all stationary source types, or a 100 ton per year increase for Congressionally specified stationary source types. In addition, although the Federal land management agency's participation is legally mandated, the air quality regulatory agency's response is not. Therefore, although the Federal land management agencies have an "affirmative responsibility," they do not have "affirmative authority" to protect the air quality related values (including visibility) on any lands they administer.

The Congressional goal to prevent and eliminate all anthropogenic visibility impairment within 158 mandatory Federal PSD Class I areas is very clear. However, the U.S. Congress did not specify when the goal was to be reached, at what level visibility impacts could be considered natural (non-anthropogenic), nor even at what level air pollutants cause visibility impairment (a "just noticeable change"). Since the EPA visibility regulations allowed Federal land management agencies to identify areas where visibility is not an important value, the USDA-Forest Service identified two mandatory Federal PSD Class I areas where the National visibility goal is no longer applicable. In addition, until very recently (Final Regional Haze Regulations, 40CFR51.300 *et seq*, Federal Register, Vol. 64, No. 126, dated July 1, 1999), the EPA regulations focused on

"reasonably attributable" visibility impairment within the 156 mandatory Federal PSD Class I areas from existing stationary sources. This process was established in order to require installation of Best Available Retrofit Technology to reduce, but not necessarily eliminate, anthropogenic visibility impairment. It will take time to see how effective the new Regional Haze Regulations are in achieving the National Visibility Goal.

In summary, the Bureau recognizes and understands the USDA-Forest Service's responsibilities for the management and protection of wilderness, including the "affirmative responsibility" to protect air quality related values (including visibility) in the mandatory Federal PSD Class I areas that it manages from adverse air pollution effects. The Bureau also recognizes and understands the USDA-Forest Service's limited authority to meet these responsibilities.

Comment 11-3. The visibility impact screening analysis results were not "downplayed in the text, and not even mentioned in the executive summaries of both EIS's" nor was "the visibility methodology showing the least impairment ... selected as the impact to be discussed in the executive summaries of both EIS's and the conclusions section in the Air Quality Technical Support Document."

As clearly described in the DEIS text (Appendix D), "A conservative visibility screening level analysis indicated that proposed project operations might result in a perceptible (1.0 deciview) visibility reduction on very clear days at several the PSD Class I and II sensitive receptors, therefore a more refined potential visibility impact analysis was performed" and "As shown in Table D-3, the refined visibility impact analysis predicted that a 'just noticeable change' greater than 1.0 deciview would occur on a single day at only the PSD Class I Rawah Wilderness Area. This predicted impact would not occur from the project sources or the 'No Action' sources alone, but from all sources combined (total cumulative sources)." The DEIS further described the USDA-Forest Service (Regions 2 and 4) visibility significance threshold of a 0.5 deciview Limit of Acceptable Change, and that based "on this more restrictive ½ of a 'just noticeable change' level, cumulative operations would exceed the USDA-Forest Service 'Limit of Acceptable Change' on a single day at both the PSD Class I Rawah Wilderness Area (1.68 deciview) and the [Federal] PSD Class II Savage Run Wilderness Area (0.67 deciview). These predicted impacts would not occur from the project sources or the 'No Action' sources alone, but from all sources combined (total cumulative sources)." Since the "project sources" (both the CD/WII and the South Baggs projects) would not exceed the USDA-Forest Service LAC together, clearly the South Baggs Proposed Action would not exceed the USDA-Forest Service LAC by itself.

The Bureau conducted the very conservative, but much simpler, visibility screening analysis (method 2) to determine if potential visibility impacts within several sensitive receptors was possible. If no potential impacts were predicted using the very conservative method, then no further analysis was necessary. However, because the screening analysis did not preclude a potential for significant adverse visibility impacts, and based on the Bureau's experience in predicting potential visibility impacts in this region for previous NEPA assessments, the more refined potential visibility impact analysis (method 4) was performed.

As directed under NEPA (40CFR1502.12), the Executive Summary "adequately and accurately" summarized "the major conclusions, areas of controversy (including issues raised by agencies and the public), and the issues to be resolved (including the choice among alternatives)." The

Bureau also provided a detailed description of both analyses' methods and results in a separate Air Quality Technical Support Document (USDI-BLM 1999a). The Bureau also assembled all air quality modeling inputs, code and results onto compact disks. All of these materials were available to the general public upon request, and copies were provided "for inspection by potentially interested persons within the time allowed for comment."

Finally, the Federal Land Managers' Air Quality Related Values Workgroup (FLAG) has revised their recommended visibility impact technical analysis procedure as described in the "Draft Phase I Report" dated May 4, 1999 (NPS 1999). Although this is an internal review document, FLAG anticipates circulating its preliminary final version for public review and comment through a Notice of Availability to be published in the Federal Register in the Winter of 1999-2000. FLAG has developed analytical procedures in order to evaluate potential air pollution effects on air quality related values (specifically visibility, vegetation/ozone, soils and surface waters/atmospheric deposition), as required under the Prevention of Significant Deterioration procedures of the Clean Air Act (New Source Review).

Although not required by NEPA, the Bureau has chosen to analyze and report potential visibility impacts from the Proposed Action and Alternatives using the FLAG Draft Phase I Report procedures for disclosure to the general public and the decisionmaker. Since the FLAG procedures are limited to mandatory Federal PSD Class I areas, FLAG values for the Bridger Wilderness Area were applied for the Popo Agie Wilderness Area and the Wind River Roadless Area. Additionally, FLAG values for the Mount Zirkel Wilderness Area were applied for Dinosaur National Monument and the Savage Run Wilderness Area.

FLAG "Draft Phase I Report" Predicted Visibility Impacts in PSD Class I and II Sensitive Areas (number of days above a "½ just noticeable change" of 0.5 deciview).

Location	Direct Project Sources a/	"No Action" Sources	Total Cumulative Sources
Federal PSD Class I Sensitive Receptors			
Bridger Wilderness	0	4	5
Fitzpatrick Wilderness	0	0	0
Mount Zirkel Wilderness	0	2	2
Rawah Wilderness	0	4	5
Federal PSD Class II Sensitive Receptors			
Dinosaur National Monument	0	0	2
Popo Agie Wilderness	0	3	5
Wind River Roadless Area	0	2	2
Federal PSD Class II/Wyoming PSD Class I Sensitive Receptor			
Savage Run Wilderness	0	3	4

a/ Direct Project Sources include the Continental Divide, Wamsutter II and South Baggs projects.

For potential visibility impacts predicted to be at or above a "½ just noticeable change" of 0.5 deciview for any day, the FLAG Draft Phase I Report states "The FLM [Federal Land Management Agency] would take into account magnitude, frequency, duration, and other factors in making an adverse impact determination" as required under the Prevention of Significant Deterioration procedures of the Clean Air Act (New Source Review). Given the results of the conservative visibility screening level analysis (method 2) reported in the Air Quality Impact Assessment Technical Support Document text (Volume II - Table 5-4) and the FLAG Draft Phase I Report analysis above, the potential for significant adverse impacts was based on the more refined visibility impact analysis (method 4).

Comment 11-4. Since there are no air quality regulatory limits or standards defining a significant adverse visibility impact level, the Bureau followed NEPA direction by including "(1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community" (40CFR1502.22(b)).

As clearly described in the DEIS text (Appendix D), "A 1.0 deciview change is considered potentially significant as adopted by the Grand Canyon Visibility Transport Commission and reported in Pitchford and Malm (1994). A 1.0 deciview change is defined as about a 10 percent change in the extinction coefficient, which is a small but perceptible scenic change under many circumstances. The 1.0 deciview value corresponds to a 2 to 5 percent change in contrast, for a 'black target' against a clear sky, at the most optically sensitive distance from an observer. Factors such as the magnitude of deciview change, frequency, time of the year, and the meteorological conditions during times when deciview thresholds are above 1.0 (as well as inherent conservatism in the modeling analyses) should all be considered when determining the significance of potential impacts."

Since the DEIS was published, EPA issued their Final Regional Haze Regulations (40CFR51.300 *et seq*, Federal Register, Vol. 64, No. 126, dated July 1, 1999) which also considered various visibility impact measures. As stated by EPA "The final rule maintains the deciview as the principle visibility metric used in establishing reasonable progress goals, in defining baseline, current, and natural conditions, and in tracking changes in visibility conditions over time. States may choose to express visibility changes in terms of other metrics, such as visual range or light extinction, as well as in terms of deciview."

EPA reached this conclusion because the deciview "metric expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions" and "A one deciview change in haziness is a small but noticeable change in haziness under most circumstances when viewing scenes in Class I areas." The Final Regional Haze regulations further state "The EPA believes the deciview metric has been adequately reviewed for use in the regional haze program. The deciview concept was introduced in 1994 in an article appearing in the peer-reviewed journal Atmospheric Environment. It was presented in the 1996 Criteria Document for the PM NAAQS as a valid metric for

characterizing visibility impairment. The EPA also recognized the deciview as an appropriate metric for regulatory purposes in chapter 8 of the 1996 Staff Paper for the PM NAAQS review. Both of these documents were reviewed and accepted by the Clean Air Scientific Advisory Committee. Visibility conditions at Class I areas have been characterized in terms of deciview in summary reports on the IMPROVE visibility monitoring network." The EPA also supported use of the deciview metric because it satisfies the National Academy of Science (NAS) Committee on Haze in National Parks and Wilderness Areas for "... development of an index that takes into account both measurement of physical changes (i.e., changes in air quality) with elements of human perception." Further, the Congressional Research Service found "that the deciview index 'conforms closely' to the NAS recommendation cited above."

When questioned whether a 1.0 deciview change is "the threshold of perception [a "just noticeable change"] in all cases for all scenes," EPA agreed "that a one deciview change should not be considered the threshold of perception in all cases for all scenes. The EPA believes that visibility changes of less than one deciview are likely to be perceptible in some cases, especially where the scene being viewed is highly sensitive to small amounts of pollution. The EPA also acknowledges the technical point made by some commenters that for other types of scenes with other site-specific conditions, [Footnote 70: For example, where the sight path to a scenic feature is less than the maximum visual range] a change of more than 1 deciview might be required in order for the change to be perceptible. However, EPA wishes to emphasize that the overall goal of the regional haze program is not to track changes in visibility for only certain vistas at a specific Class I area. Rather, the program is designed to track changes in regional visibility for the range of possible views of sky and terrain found in any Class I area, and to assure progress toward the national goal. For this purpose, EPA supports the use of the deciview metric as calculated from ambient monitoring data for tracking changes in regional visibility." EPA concluded "Thus, although a 1 deciview change may not be the threshold of perception in all situations, the fundamental advantage of using the deciview remains: the deciview metric expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions."

Again, since there is no applicable regulatory visibility standard or threshold, the Bureau evaluated potential visibility impacts "based upon theoretical approaches or research methods generally accepted in the scientific community."

The DEIS text (4.2.5 Cumulative Impacts and Appendix D) also clearly stated "In addition, the USDA-Forest Service, Regions 2 and 4 (Blett 1999), have also identified the following 'Limit of Acceptable Change' regarding potential significant visibility impacts for the PSD Class I and II sensitive areas analyzed: no day greater than 0.5 deciview, calculated on a 24-hour basis."

The DEIS compared the potential visibility impact analysis results to both the 1.0 deciview "just noticeable change" significance threshold level and the USDA-Forest Service "½ of a just noticeable change" 0.5 deciview Limit of Acceptable Change. Certainly any organization may select any other significance level for their own purposes, and the Bureau agrees that selecting a visibility threshold of significance less that 1.0 deciview would be more restrictive, but not generally perceptible.

Finally, when the Bureau presented it's basis for using 1.0 deciview "just noticeable change" as a visibility impact significance threshold at the EPA Region 8 Federal Leadership Forum meeting (Boettcher Mansion Conference Center, Golden, Colorado, on June 24, 1999), USDA Forest Service staff indicated the developers of the deciview metric (Pitchford and Malm) were dismayed that their publication was being quoted selectively and otherwise misrepresented. The Bureau has contacted both authors requesting written clarification indicating which parts of their publication should either be deleted, revised or supplemented with new information. The Bureau has not yet received a written response from the authors.

Comment 11-5. See response to comment 8-4.

Comment 11-6. It is assumed this comment refers to Page 31 of the Air Quality Impact Assessment Technical Support Document text (Volume II - 4.4 Dispersion Modeling Options), which has been revised to state "It would be desirable to have a longer time period to include many more meteorological-source impact events than is possible in a one year data set. The very conservative, but much simpler, multi-year visibility screening analysis (method 2) projected impacts represent an upper estimate of potential air quality impacts which are unlikely to actually be reached."

The DEIS included both the very conservative, but much simpler, visibility screening analysis (method 2) and the more refined visibility impact analysis (method 4) results. However, all air quality impact assessment materials presented in the DEIS represent the Bureau's "preferred method" of displaying the potential visibility degradation and not "industry's." Also see responses to comments 11-3 and 8-8.

Comment 11-7. As clearly described in the Air Quality Impact Assessment Technical Support Document text (Volume II - 4.4. Dispersion Modeling Options) "The refined analysis (Method 4) used hourly direct IMPROVE transmissometer optical extinction measurements for defining the actual visibility conditions observed throughout 1995. Therefore, the meteorological conditions which occurred in defining the actual background are the same as those applied in the modeling analysis. The IMPROVE transmissometer values measured at the Bridger Wilderness Area were assumed to be representative of the Wind River Roadless Area, and the Bridger, Fitzpatrick, and Popo Agie Wilderness Areas. The IMPROVE transmissometer values measured at Rocky Mountain National Park were assumed to be representative of Dinosaur National Monument, and the Mount Zirkel, Rawah, and Savage Run Wilderness Areas.

"In CALPOST Method 4, hourly transmissometer measurements are averaged to compute 24-hour average background extinction values for each day in 1995. The main advantage of this technique is that correlations between meteorological conditions, actual visibility conditions, and potential source impacts can be evaluated in the delta deciview calculation rather than using the conservative long term mean of the 20% cleanest seasonal visibility background data alone. For this reason, Method 4 is considered the 'refined' technique. Because Method 4 compares potential visibility impacts to the entire range (from the 1% level to the 100% level) of actual measured background visibility conditions, it may, in fact, produce larger peak visibility impacts than Method 2 which only uses the 90% level. Since the Method 2 screening approach assumes the 20% cleanest visibility conditions would occur every day of the year, the peak impact would be less, but the number of days predicted to have perceptible impacts would be greater. Method

4 is simply designed to use more detailed information on the actual background visibility conditions measured during 1995 when potential source impacts on visibility are predicted in the sensitive areas."

Because the very conservative, but much simpler, visibility screening analysis (method 2) assumes the 20th percentile cleanest seasonal IMPROVE fine particulate matter concentrations would occur on every day of the year, the visibility screening analysis (method 2) simply can not provide "more realistic estimates" of visibility impacts than the more refined visibility impact analysis (method 4) based on direct hourly optical measurements.

In addition, IWAQM (EPA 1998) does not specify the period of "baseline visibility data," nor does IWAQM indicate a preference for "at least a 5 year average." IWAQM does state "As noted previously, visibility analyses are compared against a background condition. The estimates of background visibility conditions at Class I areas are derived from the IMPROVE (Interagency Monitoring of PROtected Visual Environments) network. There are several methods of obtaining estimates of the background visibility. These include reconstructed extinction from speciated measurements of particulate matter, direct measurement of extinction with a transmissometer, and estimates of extinction from photographs."

The statement that "... visibility impacts on 'dirty days' are less apparent to the human eye ..." is also incorrect. As stated in the IWAQM document, the deciview visibility "index was specifically designed so that anywhere along its scale, haziness changes that are equally perceptible correspond to the same deciview difference. For example, a 3 dv difference caused by a change in air quality should result in about the same perceived change in haziness, whether under clean or highly polluted conditions."

However, adding equal air pollutant amounts into either clean or polluted background conditions will certainly have different visual impacts, and if future background optical conditions are more clear than those measured in 1995, greater potential visibility impacts would be predicted. Similarly, if future background optical conditions are less clear than those measured in 1995, fewer potential visibility impacts would be predicted.

Finally, as clearly described in the Air Quality Impact Assessment Technical Support Document text (Volume II - Appendix C - Analysis of Visibility Data in SW Wyoming and NW Colorado) "In order to assist in determining the 'representativeness' of 1995 optical data, Mr. Neth also prepared graphical displays of seasonal and annual 10-50-90 percentile Standard Visual Range bar charts for the Bridger and Rocky Mountain optical data period of record (Fall 1988 through Summer 1997). As would be expected, both monitoring locations showed an annual cycle with the highest (most clear) conditions occurring in Winter, and the lowest (most obscured) conditions occurring in Summer/Fall. In general, the 1995 data year was well within extreme values measured in other years (it was neither the 'most clear' or 'most obscured' data year), although the range of difference between the 10th and 90th percentile values was less than most other data years."

Comment 11-8. As clearly described in of the Air Quality Impact Assessment Technical Support Document text (Volume II - 5.2 Visibility Impacts) "It is also important to remember that both the screening (Method 2) and refined (Method 4) visibility impact analyses assumed: 1)

reconstructed or measured background conditions measured at one location were representative of the entire sensitive area (as well as other sensitive areas); 2) the maximum modeled 24-hour primary and secondary particulate matter concentration at one location was representative of the entire sensitive area; and 3) these predicted conditions would occur uniformly throughout the calculated view distance (i.e.: 250 km). These are conservative assumptions."

The Bureau regrets any confusion it caused by referring to the assumption "reconstructed or measured background conditions measured at one location were representative of the entire sensitive area (as well as other sensitive areas)" as conservative. This assumption neither overestimates nor underestimates potential impacts.

However, assuming the maximum primary and secondary particulate matter concentrations predicted at any single location within the sensitive area would occur evenly throughout the entire sensitive area, as well as in all directions throughout the entire visual range (up to hundreds of kilometers), are very conservative assumptions. The Revised Air Quality Impact Assessment Technical Support Document text (Volume II - 5.2 Visibility Impacts) has been revised to clarify the last two assumptions are very conservative. Also see responses to comments 11-9 and 11-39

Comment 11-9. As clearly described in of the Air Quality Impact Assessment Technical Support Document text (Volume II - Appendix C Analysis of Visibility Data in SW Wyoming and NW Colorado) "... the 1995 Mount Zirkel PSD Class I Area nephelometer optical data are flawed, and should not be used in the Continental Divide/Greater Wamsutter II and South Baggs Projects Air Quality Impact Assessment," "... the Mount Zirkel data displayed much greater variability, sometimes up to 100 km changes in a single day. The Mount Zirkel data were especially erratic in the winter months, but even when they 'settled down' in the summer months, the measured visibility values were typically 50 km higher (more clear) than either the Bridger or Rocky Mountain values. Erratic Mount Zirkel winter values could be consistent with local pollution source impacts and/or atmospheric cleansing by snowfall, and the summertime offset could be consistent with an incorrect assumption of Rayleigh (pure air) scattering and/or a background light absorbing component. Regardless of the cause, the Mount Zirkel data are too inconsistent to properly represent background conditions."

It may appear that the Bureau "rejected ... Mt. Zirkel visibility background data in favor of the RMNP visibility data" for "non-valid reasons" given a very simplistic comparison of nephelometer and transmissometer data. However, a more thorough understanding of how these monitoring devices operate (EPA 1999) support excluding the Mount Zirkel nephelometer data.

The Bridger and Rocky Mountain transmissometers measure the actual, total optical extinction observed in the atmosphere over a path length of a nearly 4 to 8 kilometers at elevations around 2500 meters. Transmissometers do not modify the atmosphere in any way, and directly measure light absorption due to particles (such as soot) and gases (such as NO_2), and light scattering due to particles (both fine and coarse size ranges) and gasses (Rayleigh scattering). Most importantly, transmissometers measure the optical characteristics that a human observer would see, that is, a smoke plume or clouds in the sight path will indicate high extinction and low visibility.

The Mount Zirkel nephelometer measures only a portion of light scattering due to particles (abbreviated to a 170 degree, rather than a 180 degree, acceptance angle), by drawing a continuous air sample into a nearly 20 x 20 x 25 cm sample chamber at an elevation of around 3100 meters. Nephelometers can not measure light absorption due to particles or gasses, and measure only a portion of the coarse particle scattering. Since nephelometers are periodically calibrated to "zero" with filtered air, they do not directly measure gaseous (Rayleigh) scattering, and unlike transmissometers, calibration errors are multiplicative rather than additive (Sisler 1996). Finally, and most importantly, nephelometers will erroneously indicate the best (most clear) visibility conditions during precipitation events which remove light scattering particles by wet deposition (e.g.; a nephelometer may indicate over 390 km visibility during a snow storm where actual visibility is less than 10 meters).

Given these physical differences in the two visibility measuring instruments, the nephelometer will consistently report lower extinction (clearer visibility) than a transmissometer, even if both instruments were measuring exactly the same atmospheric conditions.

Light scattering due to particle growth can be very significant under high relative humidity (RH) conditions. For example, given an equal and constant concentration of fine (ammonium sulfate) particles, light scattering increases by nearly: 2x at 70 per cent RH, 3x at 80 per cent RH, 5x at 90 per cent RH, 10x at 95 per cent RH, and over 20x at 98 per cent RH. However, even though both the transmissometer and nephelometer measure increased optical extinction due to particle growth with increasing relative humidity, the interagency IMPROVE protocol identifies transmissometer values measured above 90 per cent relative humidity as invalid due to meteorological interference.

As clearly reported in of the Air Quality Impact Assessment Technical Support Document text (Volume II -5.2 Visibility Impacts), both the Bridger and Rocky Mountain transmissometers measured nearly 5000 hours of valid data during 1995. Conversely, the "Mt. Zirkel Wilderness Area Reasonable Attribution Study of Visibility Impairment" (Watson *et al* 1996) reported less than 4200 hours of valid nephelometer data in 1995. In addition, the "Attribution Study" presented hourly observed Mount Zirkel nephelometer measurements which fluxuated wildly between 10 and 60 Mm^{-1}, especially during winter periods at greater than 90 per cent RH, and when localized existing sources of sulfate were potentially influencing the nephelometer.

To summarize, given it's high sampling elevation and location, it appears the Mount Zirkel nephelometer (when reporting valid data) was measuring low particle scattering within clouds (above the mixed layer), with occasional intrusions of sulfate from within the mixed layer, during much of 1995. The 1995 Mount Zirkel nephelometer data were too incomplete and inconsistent to properly represent background conditions.

Comment 11-10. Temporary emissions during construction (well pad construction, drilling, completion/flaring, and pipeline construction) were analyzed as described in the Air Quality Impact Assessment Technical Support Document (Volume I - Emission Inventory and Near-Field Analysis). However, these temporary emissions were not included in the far-field air quality impact assessment because these emissions would not occur under the cumulative maximum emission scenario. The maximum emission scenario occurs when all wells are operating simultaneously and total field compression is at maximum levels. Since not all wells require

maximum compression at production onset, the maximum total field compression would not occur until after construction activities were completed, several years after the last well went into production.

Both the FEIS text (4.2.3.3 Alternative B) and the Revised Air Quality Impact Assessment Technical Support Document text (Volume I - 2.2 CD/WIIPA Production Emissions and 5.1.4 HAP Impacts) have been revised to clearly include potential well blowdown VOC emission impacts (including HAPs impacts). Although the potential 8-hour benzene concentration increased, there was no significant change in the incremental long-term cancer risk for a Most Likely Exposure and a Maximally Exposed Individual. No other 8-hour HAP concentrations exceeded the lower end of the states Acceptable Ambient Concentration Levels (AACL).

Comment 11-11. Although not required by NEPA, the Bureau chose to use an advisory stakeholder process when developing the CD\WII\SB Air Quality Impact Assessment Protocol (USDI-BLM 1998) describing the methodology the Bureau intended to use prior to conducting the air quality impact assessment. The sole purpose was to enhance "cooperation before the environmental impact statement is prepared, rather than submission of adversary comments on a completed document" consistent with NEPA regulations (40CFR1500.5). However, the advisory stakeholder process does not in any way alter the Bureau's authority and responsibility to conduct the air quality impact assessment consistent with existing NEPA regulations. When used, each air quality impact assessment protocol must be developed on a case-by-case basis, and no standard protocol is anticipated.

The advisory stakeholder team included representatives of the: Operators (Amoco Oil Company, Merit Energy Company, Union Pacific Resources Company, Yates Petroleum, Snyder Oil Corporation, and others); Analysis Contractors (TRC Mariah Associates, Inc., Earth Tech, Inc., and Gary Holsan Environmental Planning); State Air Quality Regulatory Agencies (Wyoming Department of Environmental Quality-Air Quality Division and Colorado Department of Public Health and Environment-Air Pollution Control Division); Federal Agencies (U.S. Environmental Protection Agency, USDA-Forest Service, USDI-Bureau of Land Management, and USDI-National Park Service); a Tribal Agency (the Wind River Environmental Quality Commission); and an Environmental Organization (the Wyoming Outdoor Council).

Prior to and during advisory stakeholder meetings, the Bureau emphasized that the team's purpose was to enhance cooperation before the Bureau conducted it's air quality impact assessment, rather than to simply risk receiving adversarial comments on the DEIS. The Bureau also expressed a desire to obtain consensus, but insisted where consensus was not possible, the Bureau was solely responsible for conducting the assessment. Apparently, some stakeholder participants either misunderstood or chose to ignore the advisory nature of the team. This may be because in most cases consensus was reached and the Bureau conducted the air quality impact assessment as discussed by the advisory stakeholders.

Three formal advisory stakeholder team meetings were held, and formal stakeholder comments were solicited until April 10, 1998. In addition, the Bureau also communicated with individual stakeholder team members as needed prior to issuing the Final Air Quality Impact Assessment Protocol on September 28, 1998 (USDI-BLM 1998). All "protocol and modeling related decisions" were made by the Bureau, and not by any other stakeholder (including Amoco Oil

Company).

Finally, as clearly stated in the Final Protocol (Page 1) "The purpose of this protocol is to ensure that the approach, input data, computational methods, etc., are acceptable to BLM, and that interested parties have had the opportunity to review and provide input, before the study is initiated." In a few instances, based on unforseen circumstances after the Final Protocol was issued, the Bureau modified the air quality impact assessment procedures. These changes are described in the Revised Air Quality Impact Assessment Technical Support Document (USDI-BLM 1999b), and were discussed at a preliminary results presentation for the Bureau's Wyoming State Director (held February 16, 1999). The entire advisory stakeholder team was invited to attend that presentation and to present any comments at that time. Although not required by NEPA, using an advisory stakeholder process to assist the Bureau in implementing it's authority and responsibility to conduct air quality impact assessments is consistent with existing NEPA regulations.

Comment 11-12. As required by NEPA, the Bureau addresses each of it's potential management decisions separately depending on the specific Proposed Action. Although there is no "standard" air quality impact analysis methodology, the Bureau follows the Federal NEPA regulations faithfully. Regarding individual Proposed Actions and Alternatives, the methods used to evaluate potential air quality impacts are determined on a case-by-case basis. This is consistent with NEPA direction to discuss impacts "in proportion to their significance" (40CFR1502.2(b)) and to apply analysis methods that are generally accepted in the scientific community (40CFR1502.24). It is logical that the Bureau may use much of the same data and many of the same methods as state, tribal or local air quality regulatory agencies (which must be standard by law), however NEPA specifies only the systematic approach (depending on the scope, potential significance, etc.), and not standard methods to adequately disclose potential air quality impacts from a Proposed Action and Alternatives before such activities are authorized.

Comment 11-13. See response to comment 8-2.

Comment 11-14. See responses to comments 11-9 and 11-39.

Comment 11-15. Also see responses to comments 11-3, 11-7, and 12-28.

Comment 11-16. As described in response to comment 11-11, the Bureau chose to use an advisory stakeholder process to prepare a protocol describing the methodology the Bureau intended to use prior to conducting the air quality impact assessment. That formal process was completed when the Final Protocol was issued on September 28, 1998. The visibility analysis was done in a "technically supportable" manner, and no re-analysis is necessary. Also see responses to comments 8-4, 11-2, 11-3, 11-4, 11-7, 11-33, 12-28, and 13-2.

(Continental Divide/Wamsutter II/South Baggs Air Quality Technical Support Document Comments - Volume I, Near Field Analysis)

Comment 11-17. The Revised Air Quality Impact Assessment Technical Support Document text (Volume I - Executive Summary) has been corrected.

Comment 11-18. The Revised Air Quality Impact Assessment Technical Support Document text (Volume I - Figures 1.1 and 2.3) has been revised to indicate the correct location of the South Baggs project area. However, these figures were not used to determine modeled source locations in the analysis, but only to show the approximate locations of general features within the Cumulative Impact Analysis Area. Modeled sources and receptors were located using Universal Transverse Mercator (UTM) coordinates determined from USGS and BLM maps.

Comment 11-19. The assumed time frames are consistent between the CD/WII DEIS and the Air Quality Impact Assessment Technical Support Document (Volume I - Appendix A1) emissions calculations for rig up/rig down, pipeline construction, and well pad/resource road construction. Because the completion and testing phase (during which flaring will take place) is estimated to occur for a maximum of 15 days, flaring emissions were conservatively calculated for a period of 15 days, 24 hours per day.

The time durations for rig up/rig down, pipeline construction, well pad/resource road construction, and completion/testing reported in the South Baggs DEIS are inconsistent with those used to calculate pollutant emissions in the Air Quality Impact Assessment Technical Support Document (Volume I - Appendix A2). However, because activity duration estimates reported in the CD/WIIPA were greater than those reported in the South Baggs EIS, the CD/WIIPA time durations were conservatively used to calculate South Baggs emission rates.

Finally, the Revised Air Quality Impact Assessment Technical Support Document text (Volume I - 2.1 Construction Emissions) has been revised to clearly describe the completion and flaring emission assumptions.

Comment 11-20. As authorized under NEPA (40CFR1502.21 and 40CFR1502.24), the Bureau provided a detailed description of the methodology used in performing the air quality impact assessment in separate Air Quality Impact Assessment Technical Support Documents (USDI-BLM 1999a and USDI-BLM 1999b). The Bureau also assembled all air quality modeling inputs, code and results onto compact disks. All of these materials were available to the general public upon request, and copies were provided "for inspection by potentially interested persons within the time allowed for comment."

Comment 11-21. The Revised Air Quality Impact Assessment Technical Support Document text (Volume I - 4.1 Meteorology and Figure 1.1) has been revised to indicate the correct location of Rawlins, Wyoming.

Comment 11-22. A representative meteorological data set was selected for use in each modeling analysis. The South Baggs surface meteorology data were determined to be most representative of meteorological conditions at the South Baggs Project area, and are representative of a small portion of the CD/WIIPA. There are terrain features close to the South Baggs Project Area that affect the observed meteorology. For the CD/WIIPA, the Rock Springs data were selected due in part to Rock Springs' close proximity. These data also best represent typical regional meteorology conditions in southwest Wyoming, exhibiting a greater frequency of high wind speedr and persistent wind direction.

Comment 11-23. The Revised Air Quality Impact Assessment Technical Support Document text (Volume I - Table 4.1) has been revised to clearly indicate that the assumed South Baggs Area background concentrations were based on data collected throughout southwestern Wyoming and northern Colorado.

Comment 11-24. The particulate modeling analysis included emissions from construction activities at a single well site, and concurrent construction of adjoining well sites is not likely; therefore, well spacing was not addressed.

However, the dispersion modeling analyses for CO, NO_x, and HAPs examined production impacts at multiple well sites. For these analyses, the minimum well site spacing as displayed in the Revised Air Quality Impact Assessment Technical Support Document (Volume I - Figure 5.8) was used to maximize potential impacts.

Comment 11-25. See response to comment 11-10.

Comment 11-26. The Revised Air Quality Impact Assessment Technical Support Document text (Volume I - Table B1-1.5) has been revised to clearly describe the table's contents.

Comment 11-27. Due to the similarity in surface disturbance size in the CD/WIIPA, the Baggs, Wyoming, wind data were initially used to calculate wind erosion emissions for both the South Baggs and CD/WII project areas. This assumption resulted in an underestimation of wind erosion emission in the CD/WIIPA, which has been revised in both the Revised Air Quality Impact Assessment Technical Support Document text (Volume I - 2.4 Wind Erosion Emissions, and Table 5.2) and the CD/WIIPA FEIS text (4.1.1.1 Proposed Action).

Comment 11-28. As was done for previous NEPA documents, and because the Reference (Scheffe 1988) would not otherwise be "reasonably available for inspection by potentially interested persons" (40CFR1502.21), the Bureau included the most legible available copy in the Air Quality Impact Assessment Technical Support Document (Volume I - Appendix E: VOC/NO_x Point Source Screening Tables). Subsequent to your comment, the Bureau contacted the author for a more legible version, but the document is currently out of print. Although the version printed for the DEIS is not perfect, the Bureau finds the text completely legible, and would gladly meet with the USDA-Forest Service to jointly review the document.

(Continental Divide/Wamsutter II/South Baggs Air Quality Technical Support Document Comments - Volume II, Far Field Analysis)

Comment 11-29. As clearly described in the DEIS text (4.2.3.3 Alternative B) and in the Air Quality Impact Assessment Technical Support Document text (Volume I - 5.1 Continental Divide/Wamsutter II Near-Field Modeling and 5.2 South Baggs Near-Field Modeling), potential near-field air quality impacts were modeled separately for each proposed action. However, for the far-field cumulative analysis (as described in the Final Air Quality Impact Assessment Protocol), given the same likelihood of potential development, both the Continental Divide/Wamsutter II and South Baggs projects were combined and reported as "Project Sources." Although dependant on temporal meteorological conditions, distance to sensitive

receptors, etc., it is safe to assume the combined predicted "Project Sources" impacts are dominated by the CD/WII Proposed Action (with 3,000 wells, 5 compressor stations and one gas plant) rather than the South Baggs Alternative B (with 90 wells and one compressor station).

Comment 11-30. The Revised Air Quality Impact Assessment Technical Support Document text (Volume II - Figure 3.2) has been revised to clearly see the modeled wind vectors.

Comment 11-31. The Revised Air Quality Impact Assessment Technical Support Document text (Volume II - 4.2 Modeling Grid and Receptors) has been revised as recommended.

Comment 11-32. As clearly stated in the Air Quality Impact Assessment Technical Support Document text (Volume II - 4.4 Dispersion Modeling Options), "The relative humidity correction is intended to account for aerosol growth by hygroscopic particles" and "The tabulated relative humidity adjustment factors in the FLAG report (NPS 1998) are used to determine F_m. Unlike the FLAG protocol, however, a maximum relative humidity of 90% has been used in computing F_m rather than 98%, because it is highly unlikely, due to non-uniform cloudiness, that fundamental aerosol and observed visibility criteria (i.e., homogenous atmosphere, uniform sky brightness, etc.) would occur under high relative humidity conditions in the analysis area. The basis for limiting aerosol growth at 90% relative humidity is because optical monitoring devices are not reliable at humidity values above this level. In CALPOST, the FLAG methodology is implemented as visibility Method 2."

The basic formula for calculating visibility impacts, developed by H. Koschmieder in 1924, includes the assumption that sky brightness at the observer is similar to the sky brightness at the observed object. As described in "Protecting Visibility - An EPA Report to Congress" (EPA 1979) "The effect on visual range of inhomogeneous illumination, such as that under scattered clouds, is difficult to analyze by elementary methods. Limited experimental evidence indicates that this effect may not be great for short visual ranges (less than 50 km)" however "The studies were conducted in relatively polluted conditions. The effect of scattered clouds or differing sky brightness on visual range in clean areas should be further investigated."

In 1991, the U.S. National Acid Precipitation Assessment Program (NAPAP 1991), in their "Report 24 - Visibility: Existing and Historical Conditions - Causes and Effects" stated "To the person on the street (and to perception investigators), visibility is associated with changes in the appearance of scenic characteristics (e.g., changes in color, loss of detail, or limits on the most distant visible feature). In addition to the optical characteristics of the atmosphere, lighting conditions and intrinsic scene characteristics control the appearance of scenes. Lighting conditions change continually due to variations in sun angle. Scene characteristics (i.e., cloud cover, vegetation, snow cover, etc.) are more erratic than sun angle changes and are generally beyond quantitative measurement or prediction. ... With a number of assumptions and for simple lighting conditions (e.g., no clouds in the sky) scene measurements can be used to estimate optical indexes." The Report further stated "there are a number of variables such as sun angle, cloud cover, and scene composition that are firmly integrated into judgments of aesthetic value of a scenic resource. Therefore, studies designed to assess social, psychological, or economical value associated with a given change in atmospheric particulate concentration must be designed in such a way that these confounding variables do not affect the outcome of the experiment."

In addition, the DEIS applied the deciview visual index developed by Pitchford and Malm (1994) to indicate the potential for a "significant adverse" visibility impact. The authors concluded: "a 1 to 2 dv [deciview] difference corresponds to a small, visibly perceptible change in scene appearance where the assumptions used to develop the deciview scale are met ..." Their assumptions included "... that the sky radiance at the target is the same as the sky radiance at the observer" (e.g.; no clouds in the sky).

Finally, IWAQM (EPA 1998) makes no recommendation regarding the rejection of transmissometer data "on the basis of RH unless it exceeds ... 98%." IWAQM does state "As noted previously, visibility analyses are compared against a background condition. The estimates of background visibility conditions at Class I areas are derived from the IMPROVE (Interagency Monitoring of PROtected Visual Environments) network. There are several methods of obtaining estimates of the background visibility. These include reconstructed extinction from speciated measurements of particulate matter, direct measurement of extinction with a transmissometer, and estimates of extinction from photographs."

In fact, the IMPROVE "Standard Operating Procedures and Technical Instructions for Transmissometer Systems" (Air Resource Specialists, Inc., n.d.) and the EPA "Visibility Monitoring Guidance" (EPA 1999) both clearly state "When the relative humidity measured at the receiver is greater than 90%, the corresponding transmissometer measurement is flagged as having a possible interference" and "... inferring a precise knowledge of the meteorological conditions along a sight path at high relative humidity from a single point measurement is very difficult. When the relative humidity is above 90% at one end of the path, small random temperature or absolute humidity fluctuations along the path can lead to condensation of water vapor causing meteorological interferences. Thus, in accordance with the conservative philosophy expressed above, the 90% relative humidity limit was selected for this test."

Comment 11-33. NEPA directs the Bureau to "succinctly describe the environment of the area(s) to be affected" (40CFR1502.15), to "provide full and fair discussion of [potential] significant environmental impacts" (40CFR1502.1), and to "present the [potential] environmental impacts of the proposal and alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public" (40CFR1502.14).

The refined visibility impact analysis used hourly transmissometer optical monitoring data collected during 1995 at both the Bridger Wilderness Area and Rocky Mountain National Park mandatory Federal PSD Class I areas in order to define existing background conditions. Since there are a number of "reasonably foreseeable" air pollutant emission sources which were not operating in 1995, their potential visibility impacts were analyzed to establish the future Affected Environment (adjusted background). Finally, potential visibility impacts from the Proposed Action and Alternatives were combined with the adjusted background in order to fully disclose potential cumulative environmental impacts. Given the mixture of impacts from existing sources, "proposed, but not operating" reasonably foreseeable sources, and the Proposed Action and Alternatives, the Bureau could not use a 5-year average of measured optical conditions. Also see responses to comments 8-31, 11-3, 11-7, 12-28, and 13-2.

Comment 11-34. NEPA does not require the use of any specific method, including the USDA-Forest Service "protocols," for assessing potential visibility impacts in sensitive areas. Also see responses to comments 11-3, 11-6, 12-28, and 13-2.

Comment 11-35. Although conditions may be different on the eastern side of the continental divide, the availability of measured visibility data to characterize these differences is limited. The Method 2 background visibility values provided by the USDA-Forest Service did not distinguish between the eastern and western sides of the continental divide. For Method 4, the transmissometer data is also only available on the western side of the continental divide, so the assumption that the Bridger data is representative of the entire area is necessary, given the available data. Also see response to comment 11-8.

Comment 11-36. The ANC values used for Deep Lake and Lower Saddlebag Lake were those identified in the Final Air Quality Impact Assessment Protocol. Although the revised values do not have any material impact on the results or conclusions, the FEIS text (Table D-2) and the Revised Air Quality Impact Assessment Technical Support Document text (Volume II - 5.3 Deposition Fluxes and Table 5.11) have been recalculated based on the revised background ANC values provided by the USDA-Forest Service.

Comment 11-37. The Revised Air Quality Impact Assessment Technical Support Document text (Volume II - 5.3 Deposition Fluxes) has been revised to include the full set of atmospheric deposition/lake chemistry equations.

Comment 11-38. The assertion that "... the only real difference between the data of Mt. Zirkel and RMNP [Rocky Mountain National Park], is that Mt. Zirkel data shows cleaner visibility" and "... that by erroneously using data to represent Mt. Zirkel, the future visibility impact at Mt. Zirkel from the proposed actions may be greatly underestimated" is plausible given a very simplistic comparison of nephelometer and transmissometer data. However, a more thorough understanding of how these monitoring devices operate (EPA 1999) support excluding the Mount Zirkel nephelometer data. Also see response to comment 11-9.

(South Baggs DEIS Comments)

Comment 11-39. As described in both the DEIS text (2.2 Alternative B - Develop 90 wells within the South Baggs Analysis Area in addition to existing operations [Maximum Development Scenario] and 4.2.3.3 Alternative B) and in the Air Quality Impact Assessment Technical Support Document text (Volume II - 2.0 Emission Inventory), potential air quality impacts were modeled for the maximum development of 90 wells and a 3,000 hp compressor station. Therefore, of all the proposed alternatives, the air quality impact assessment analyzed the Maximum Development Scenario, and all other alternatives would have lower potential air quality impacts. As clearly stated in the DEIS (4.2.3.1 Proposed Action [50 wells in addition to existing operations], 4.2.3.2 Alternative A [40 wells in addition to existing operations], and 4.2.3.4 Alternative C - No Action [continue existing operations]), "Potential air quality impacts would be less than those described under the Alternative B - 90 Well Total Development Scenario ..."

Comment 11-40. See response to comment 11-20.

Comment 11-41. As described in the Air Quality Impact Assessment Technical Support Document text (2.1 Construction Emissions), "The pollutant emissions that occur during pipeline construction include construction emissions from heavy equipment; tailpipe emissions from diesel construction equipment; road dust from truck traffic; and tailpipe emissions from the trucks." Further, during operations, emissions from vehicle traffic would be negligibly small because the automobile and truck traffic would be minimal once production begins.

Comment 11-42. South Baggs DEIS Table 2-4 (Comparative Impact Summary) was prepared based on the mitigation and potential impact analyses presented in Chapter 4 (Analysis of Environmental Consequences) of the DEIS. For air quality, assumed and potential additional mitigation measures were detailed in both the DEIS text (4.2.6 Mitigation Summary) and the Air Quality Impact Assessment Technical Support Document text (Volume I - 3.0 NO_x Mitigation).

Comment 11-43. Section 3.3.2.1 has been revised to delete one of the references.

Comment 11-44. This was the most recent data available at the time the analysis was completed. Although there are likely changes in the data presented in the DEIS, it is doubtful that the changes would have bearing on the conclusions provided in the Impacts Summary of the DEIS (section 4.12.4).

Comment 11-45. The FEIS text (4.2.1 Introduction) has been revised to describe the climate and air quality impact analysis materials presented in Chapter 4 (Analysis of Environmental Consequences).

Comment 11-46. As clearly stated in the DEIS text (4.2.3.1 Proposed Action [50 wells in addition to existing operations], 4.2.3.2 Alternative A [40 wells in addition to existing operations], and 4.2.3.4 Alternative C - No Action [continue existing operations]), "Potential air quality impacts would be less than those described under the Alternative B - 90 Well Total Development Scenario ..." Although short-term construction impacts would be the same for each alternative, both the compression requirements and the total number of well impacts would be less than those described for Alternative B. No significant, adverse impacts are anticipated from implementation of the Proposed Action or any Alternative.

Comment 11-47. Near-field dispersion modeling was performed for a patch of eight producing wells surrounding the proposed 3,000 hp compressor station operating at maximum capacity. Spacing between wells and to the centralized compressor station was the minimum well spacing defined in the proposed action. Maximum modeled concentrations from well emissions alone were found to occur at receptors closest to the well. Maximum modeled concentrations from the compressor station were found to occur several hundred meters away from the facility but within the representative production area. Considering the "reasonable, but conservative" source layout and emissions used, and the localized nature of maximum modeled concentrations, it is reasonable to state that adding additional wells beyond the modeled well patch would not significantly increase the overall maximum concentration.

Comment 11-48. See response to comment 11-20.

Comment 11-49. See response to comment 11-45.

Comment 11-50. As clearly described in the DEIS text (Appendix D) "The Pinedale Anticline project proposal was specifically not included in the cumulative air quality impact analysis as a 'reasonably foreseeable' development because of its unsettled, speculative status at the time the cumulative analysis was initiated. What may actually be authorized for development is unknown. No WDEQ-AQD air pollutant emission permits have been issued for the proposed Pinedale Anticline activities. Thus, to include the proposed project would mislead the public and the Bureau decisionmaker with unsupportable estimates of cumulative effects on the resources, ecosystems, or human communities. The Bureau is developing the Pinedale Anticline air quality impact assessment protocol through its 'stakeholder' process, and it is clear the Pinedale Anticline cumulative air quality impact assessment will consider including the Continental Divide/Wamsutter II and South Baggs projects, if authorized (as well as other 'reasonably foreseeable,' authorized, or permitted actions)."

Although the Pinedale Anticline protocol has since been prepared (USDI-BLM 1999c), the air quality impact analysis was not completed, nor was the DEIS published when the South Baggs Area air quality impact analysis was completed. Therefore, the anticipated Pinedale Anticline project was not a "reasonably foreseeable" development for inclusion in the South Baggs Area FEIS, although the South Baggs project is a "reasonably foreseeable" development for inclusion in the Pinedale Anticline DEIS.

Comment 11-51. See responses to comments 11-3, 11-6, and 11-30.

Comment 11-52. The FEIS text (Chapter 6, Consultation and Coordination, Table 6-2) has been revised to include participants involved in the Air Quality Impact Assessment TSD.

Comment 11-53. The FEIS text (Table D-2) has been revised to include the Minimum ANC levels for Island Lake and No. 4 Lake in the Rawah mandatory Federal PSD Class I wilderness area.

COMMENT LETTER 12: WYOMING OUTDOOR COUNCIL

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

Comment 12-1. Comment noted.

Comment 12-2. Comment noted.

Comment 12-3. The BLM believes that adequate protection measures have been identified in the EIS to prevent unnecessary and undue degradation and to ensure the natural resources and environmental quality would be protected for future generations. We appreciate your succinct discussion of BLM's responsibilities under FLPMA and Title 43 of the *Code of Federal Regulations*, and we believe that we have satisfied these responsibilities, as well as those of

NEPA, in this EIS.

Comment 12-4. The BLM believes that the measures proposed in the Biological Assessment are adequate for wildlife protection. Furthermore, this project under any alternative has not yet been approved; the Record of Decision (ROD) is the project authorizing document, and all required mitigations will be identified therein. Alternatives considering fewer wells (see Section 2.2 of the DEIS) were considered, as were alternate drilling techniques (see Section 2.5 of the DEIS).

Comment 12-5. The BLM believes that measures provided in the standard mitigation guidelines (see Appendix A), and mitigation measures provided by Merit and by environmental analysis are adequate for resource protection. The BLM cannot deny all development within the areas you have mentioned because leases have already been issued. Furthermore, we do not believe that such restrictions are necessary to give adequate protection to the various resources. Such restrictions would essentially create a no-surface-occupancy situation and preclude the recovery of the oil and gas resources.

Comment 12-6. The term or classification Sensitive Resource Area (SRA) was used in the Continental Divide/Wamsutter II DEIS to identify area of special concern within a very large area. The South Baggs area is a much smaller area and to subdivide it into smaller areas would serve no practical purpose. The concerns you mentioned have been addressed in the DEIS. The situations that might define an SRA were identified during the scoping process as issues. These issues have been addressed in the DEIS.

Comment 12-7. Thank you for your comment. The exact location of every well can not be determined at this time. The location of each well depends on information provided by the Operator, and may be subject to change. Since the South Baggs Project area is within overlapping winter range, this important wildlife habitat area cannot be avoided. There will be a site-specific EA prepared for each well during the APD, ROW, and Sundry Notice review process. The WGFD will be notified of every well and have the opportunity for providing input into the process. Site-specific information gathered during the field visits will be used during these site-specific reviews. The need for any additional site-specific information will also be evaluated during the APD review process.

Comment 12-8. Large or numerous development facilities are not a component of the South Baggs Proposed Action or alternatives (see section 2.1.3.4, Ancillary Facilities). Since only one new compressor facility is proposed, concentrated development facilities would not be practical.

Comment 12-9. Comment noted. Grazing practices on public lands within the South Baggs project area may be modified as deemed necessary by the BLM if such practices are detrimental to establishment of vegetation on disturbed areas or adversely effect other resource values.

Comment 12-10. As stated on Comment 12-5 above, the BLM believes that measures provided in the standard mitigation guidelines (see Appendix A), and mitigation measures provided by Merit (section 2.4.1.2 of the DEIS) and by environmental analysis are adequate for resource protection.

Comment 12-11. Please see response to Comment 12-5 above.

Comment 12-12. The BLM believes that this EIS adequately discloses the potential impacts of the proposed project on all the surface resources of the South Baggs project area, and includes appropriate protection/mitigation for the affected surface resources. Required resource protection measures will be identified in the ROD and further specified during subsequent APD and ROW application reviews.

Comment 12-13. It is essential to recognize that no action does not mean that no oil and gas development would occur on federal lands. The no action alternative is the continuation of the existing situation, the present situation is the base line. Continued recovery of oil and gas resources is part of the existing situation. Recovery of oil and gas resources is authorized by the Great Divide Resource Area RMP. To stop the development of oil and gas resources would not be in compliance with the RMP.

To deny all oil and gas activity on the valid leases in the South Baggs area, would constitute a breach of contract of the Operator's rights to conduct development activities on the leased lands. Authority for complete denial can be granted only by Congress, which can order the lease forfeited subject to compensation. The BLM can only suspend the lease pursuant to Section 39 of the Mineral Leasing Act pending consultation with Congress for a grant of authority to preclude drilling and provide compensation to the lessee.

Comment 12-14. Comment noted. As stated in the DEIS (section 1.5.4), the proposed natural gas production project is in conformance with management objectives and actions provided in the Great Divide Resource Area RMP.

Comment 12-15. Comment noted. The BLM believes that cumulative impacts have been adequately addressed in this EIS. The results of the southwest Wyoming evaluation indicate that an EIS analyzing the cumulative impacts of oil and gas development in southwest Wyoming is unnecessary.

The DEIS clearly described the proposed and reasonably foreseeable air pollutant emission sources included in the air quality impact assessment, identified potential cumulative air quality impacts, and listed analysis assumptions which "could lead to an under-estimation of potential impacts, but are beyond the scope of the cumulative air quality impact assessment for predicting 'reasonably foreseeable significant adverse effects on the human environment" (Appendix D). In addition, the Air Quality Impact Assessment Technical Support Document provided maps of the cumulative air quality impact analysis area (including air pollutant source locations and sensitive air quality area boundaries) and a complete listing of all modeled air pollutant emission source locations and characteristics. As clearly described in the DEIS text (3.2.2 Air Quality and 4.2.5 Cumulative Impacts), existing air pollutant emission sources were represented by in the background air quality conditions or were specifically modeled as "reasonably foreseeable" facilities.

Comment 12-16. Impacts from all known private land development as well as those from all known past, present, and reasonably foreseeable future actions are analyzed in this EIS. The

DEIS considers all direct, indirect, and cumulative impacts for all affected resources on federal, state, and private lands and considers additional mitigation for federal lands. The BLM has considered the impacts of granting ROWs to access non-federal lands under the No Action Alternative.

Comment 12-17. Comment noted. The BLM believes that the mitigation measures and associated plans are adequately presented in the DEIS.

Comment 12-18. Comment noted. The BLM believes the mitigation and monitoring measures presented in the DEIS are adequate for identifying potential problem areas.

Comment 12-19. As clearly stated in the DEIS (sections 4.7.3.1.3 and 4.7.3.1.4) aerial and ground surveys were conducted to determine sage grouse and raptor populations and distributions. Additionally, the DEIS (section 4.8) discusses populations and distributions of special status wildlife species, to include aerial and ground survey data. BLM believes this survey data is adequate to implement monitoring and mitigation plans.

Comment 12-20. The mitigation measures and monitoring requirements found in Chapters 2 and 4 will be added to, modified, or selectively withheld by the authorized officer, based on site-specific information gathered during the on-site review of an application for permit to drill (APD) or right-of-way (ROW). The APD or ROW holder is required to comply with the surface use plan they submitted with their application and all conditions of approval or stipulations added to the permit at the time of approval. Compliance with the surface use plan, conditions of approval, and stipulations is mandatory. Noncompliance can result in fines or trespass fees.

Installation of any project is monitored by the BLM, both while being installed and after construction is completed.

All of BLM's ROW files are open for public review, and all mineral lease files, except for some down-hole proprietorial information, are also open to the public. Additionally, all monitoring results would be available for public review.

Comment 12-21. As clearly stated in the DEIS (Executive Summary) "Since BLM approved activities must comply with all applicable local, state, tribal and Federal air quality laws, statues, regulations, standards and implementation plans, significant adverse impacts to air quality are not anticipated to occur from implementation of any of the alternative actions." The technical basis for this conclusion were presented in the DEIS (3.2.2 Air Quality) and the Air Quality Impact Assessment Technical Support Document.

Comment 12-22. See response to comment 11-29.

Comment 12-23. See response to comment 11-50.

Comment 12-24. See response to comment 11-10.

Comment 12-25. The DEIS neither "downplays and ignores" the conservative visibility

screening level analysis results, nor did the Bureau use "questionable methods to achieve these results." Also see responses to comments 11-3, 11-7, 12-28, and 13-2.

Comment 12-26. See response to comment 11-4.

Comment 12-27. See response to comment 11-6.

Comment 12-28. It is not clear why some agencies prefer to use the visibility screening analysis (method 2) as part of their PSD Permit - New Source Review, but that method: 1) is very easy to apply; 2) represents a conservative (over-estimate) of potential visibility impacts; 3) provides a conservative buffer against possible perceptible impacts; and 4) represents the desired future condition of no manmade visibility impairment in mandatory Federal PSD Class I areas.

The DEIS did not confuse "the public by combining the two models without disclosing their results separately and then choosing to display only the results from Method 4 that diminish the visibility impacts." Both the very conservative, but much simpler, visibility screening analysis (method 2), and the more refined visibility impact analysis (method 4) were performed and their results clearly reported separately in the DEIS.

However, your statements effectively demonstrate the general confusion among Federal land management agencies and the general public regarding the different purposes and interpretation techniques of visibility impact analyses for air regulatory purposes (permit review) and non-regulatory potential environmental impact analysis and disclosure (NEPA review). For air pollutant emission permitting, very specific project design information, very specific air regulatory agency analysis procedures, and Federal land management review and comment procedures have all been established (and must be followed) under the Clean Air Act and other applicable air quality regulatory directives. Once a permit is issued, the applicant has permission to operate. Under NEPA, project designs are often preliminary (enhancing a review of alternatives), the specific environmental impact analysis methods are selected based on the specific situation (although the overall analysis process is defined by NEPA), and although the decisionmaker may require specific mitigation measures, the applicant can not operate until all applicable operating permits (including air quality) have been issued. In summary, both processes use similar analysis techniques (monitored data, dispersion modeling, etc.), but their purpose and needs vary greatly.

Also see responses to comments 11-3, 11-7, 11-33, and 13-2.

Comment 12-29. Please see responses to comments 11-9 and 11-38.

Comment 12-30. Please see responses to comments 13-4 and 13-6.

Comment 12-31. To the extent the "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken" (40CFR1500.1(b)), the comment that "all that is available are untested assumptions" is correct. However, air pollutant emission limits and ambient air quality monitoring requirements are the responsibility of the applicable air quality regulatory agency, based on their

air pollutant emission permit analysis and approval. The U.S. Congress did not grant any Federal land management agency air quality regulatory authority. In fact, ever since the original Clean Air Act was passed (P.L. 159, dated July 14, 1955), it has been the declared policy of the U.S. Congress "... to preserve and protect the primary responsibilities of the States [Tribal] and local governments in controlling air pollution ...".

Comment 12-32. As clearly stated in the DEIS text (4.2.3.3 Alternative B), "... neither the State of Wyoming nor EPA have established HAP standards ..." Of six chemicals analyzed, only benzene exceeded the most restrictive 8-hour Pinellas County Air Pollution Control Board (Florida) Acceptable Ambient Concentration Level. Further analysis of the potential incremental long-term cancer risk for a Most Likely Exposure and a Maximally Exposed Individual due to benzene and formaldehyde indicated no potential for concern. Also see response to comment 12-31.

Comment 12-33. See response to comment 12-31.

Comment 12-34. Existing activities contributing to water quality reductions in the South Baggs project area are described in DEIS sections 3.4.2.1 and 3.4.2.2. Petroleum activities are not identified as the only cause of stream impairment. Rather, a number of factors, including high natural erosion rates in this arid climate, combine to reduce water quality. The BLM believes that project-specific and cumulative impacts to water quality are adequately addressed in DEIS.

Comment 12-35. While no point source discharges are anticipated at this time, your comment is noted, and the BLM concurs and would work with the WDEO/WQD to ensure that no point source discharges are authorized to "water quality limited segments."

Comment 12-36. The proposed project would be in compliance with all existing water quality standards (see DEIS section 2.1.4.2.6).

Comment 12-37. The DEIS (section 4.7.3.1.2, page 4-52, paragraph 3) clearly states that post-reclamation disturbance for crucial winter/yearlong range of the project area under the proposed action would be approximately 99.4 acres, not thousands of acres.

The BLM intends to do everything it can to mitigate the removal of sagebrush in the South Baggs project area and to protect sage grouse and the other species that depend upon this ecosystem. Numerous mitigation measures are outlined in the DEIS to this end. However, just as protection of wildlife habitat is a legitimate use of BLM lands, so is oil and gas development.

Comment 12-38. The DEIS discusses at length the impacts of the proposed project to wildlife species. These impacts and associated mitigations are presented in DEIS throughout sections 4.7 and section 4.8.

Comment 12-39. Baseline wildlife studies were conducted on the South Baggs project area and an extensive review of extant data was completed. Oil and gas exploration and development activities have been ongoing in the South Baggs area for some time, and the BLM realizes that the landscape will change from its existing characteristics under additional oil and gas

development. To characterize such changes as an "industrial landscape" is an overstatement.

Comment 12-40. Comment noted. As stated in section 4.7.3.1.3 of the DEIS, available evidence indicates that sage grouse do not currently make use of the South Baggs project area. There are no records of leks within two miles of the project area, and transect surveys revealed no evidence of grouse use within the sagebrush habitats.

Comment 12-41. Comment noted. See response to comment 12-40.

Comment 12-42. The BLM believes that the DEIS adequately addresses potential impacts on sage grouse and that an informed decision can be made. See response to comment 12-40.

Comment 12-43. The USFWS is being consulted regarding the proper procedures for clearance for mountain plover. An updated biological assessment (BA) has been completed for the project area and adjacent lands. Information and opinions provided in the BA will be incorporated into the Record of Decision (ROD).

Comment 12-44. See response to comments 2-4 and 2-5.

Comment 12-45. Thank you for your comment. The BLM does follow USFWS guidelines for black-footed ferret surveys (see DEIS section 4.8.2.1). The USFWS is being consulted regarding possible changes for surveying Black-Footed Ferret. An updated biological assessment (BA) has been completed for the project area and adjacent lands. Information and opinions provided in the BA concerning the Black-Footed Ferret will be incorporated into the Record of Decision (ROD).

Comment 12-46. Comment noted.

Comment 12-47. Consultation with Native American government bodies is required by several laws. Consultation is guided by BLM Manual Handbook H---8160-1 *General Procedural Guidance of Native American Consultation*. In Wyoming, the BLM views consultation with Native Americans as an ongoing process. Native American cultural groups that may have a historical interest in the area were contacted to convey to the BLM any questions and/or concerns they may have regarding the South Baggs project. The BLM will continue to take the concerns of tribal representatives into account in developing management strategies for the South Baggs area.

Comment 12-48. The BLM manages the public lands for multiple resources and believes that this EIS identifies that the use of the various resources can be balanced in a reasonable way.

COMMENT LETTER 13: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY - REGION 8

Comment Response: Entire Letter - Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

RESPONSE TO COMMENTS

Comment 13-1. Thank you for taking the time to review the DEIS and for providing your comments. The BLM considers all comments during preparation of an EIS.

The BLM believes the procedures identified for monitoring, evaluation, review, and potential modification (e.g., changed mitigative actions) identified in the DEIS Reclamation Plan, (Appendix B) provide for adequate adaptive environmental management for most resources with the potential for significant impacts. The BLM does not believe an adaptive environmental management plan is necessary for air quality since no project-specific significant air quality impacts are anticipated, and in any event the BLM cannot implement specific air quality mitigation since we have no authority to do so. The following provides a brief summary of how the reclamation plan provides for adaptive environmental management.

The Reclamation Plan (DEIS Appendix B) involves components designed to protect or otherwise minimize impacts to many area resources including surface and ground waters, vegetation communities, wildlife, livestock grazing, recreation, and visual resources. While only the BLM and the South Baggs Operator are involved in evaluating reclamation success, the BLM believes the success criteria presented in DEIS, Appendix B are adequate and that reclamation success determinations do not require alternate agency and/or public involvement.

The BLM believes that an adaptive environmental management program for surface water resources in the South Baggs area may be appropriate since no formal, project-specific surface water quality or quantity monitoring program currently exists. However, the BLM believes existing surface water protection measures presented in this EIS would adequately protect these resources.

Comment 13-2. All air quality impact assessment materials presented in the DEIS represent the Bureau's "preferred method of displaying the potential visibility degradation," and not "the proponents'."

In addition, Table D-3 does not present "the minimum number of days of potential [visibility] degradation." As clearly described in the DEIS text (4.2.5 Cumulative Impacts), "In reviewing these predicted cumulative impacts, it is important to understand the 'reasonable, but conservative' assumptions made regarding potential resource development. In developing this analysis, there is uncertainty regarding ultimate development (i.e., number of wells, equipment to be used, specific locations). The analysis was also based on a 'reasonably foreseeable' development scenario, including several conservative assumptions ..." After detailing the conservative assumptions, the DEIS text (4.2.3.3 Alternative B) clearly concludes "Based on these numerous 'reasonable, but conservative' analysis assumptions, which may actually compound one another, the projected impacts represent an upper estimate of potential air quality impacts which are unlikely to actually be reached." Also see response to comment [7-A3].

Comment 13-3. Thank you for your comment. The FEIS text (4.2.6 Mitigation Summary) and the Revised Air Quality Impact Assessment Technical Support Document text (Volume I - 3.0 NO_x Mitigation) have been revised to include cost effectiveness information.

Comment 13-4. As required by NEPA (40CFR1502.16(h), the DEIS text clearly described "means to mitigate adverse environmental impacts," including applicant-committed mitigation,

additional potential BLM-required mitigation, and other "mitigative opportunities" outside the jurisdiction of BLM's authority (4.2.6 Mitigation Summary). Although NEPA does require the lead agency (40CR1505.3(c)) "upon request, [to] inform cooperating or commenting agencies on progress on carrying out mitigation measures which they have proposed and which were adopted by the agency making the decision," actual mitigation selection and implementation, and the use of "a formal Adaptive Environmental Management Plan," are not required by NEPA. Mitigation measures (including monitoring) may be included by the decisionmaker to reduce potential significant adverse impacts in the ultimate Record of Decision.

Comment 13-5. Please refer to Comment Response 13-1 above.

Comment 13-6. As clearly stated in the DEIS text (Executive Summary) "Since Bureau approved activities must comply with all applicable local, state, tribal and Federal air quality laws, statues, regulations, standards and implementation plans, significant adverse impacts to air quality are not anticipated to occur from implementation of any of the alternative actions." The technical basis for this conclusion were presented in the DEIS (4.2 Air Quality) and the Air Quality Impact Assessment Technical Support Document (USDI-BLM 1999a).

The DEIS did not predict "a high potential for degradation" of visibility in sensitive areas, nor do "effective mitigation measures need to be defined to off-set this potential degradation." As clearly described in the DEIS text (Appendix D), "A conservative visibility screening level analysis indicated that proposed project operations might result in a perceptible (1.0 deciview) visibility reduction on very clear days at several of the PSD Class I and II sensitive receptors, therefore a more refined potential visibility impact analysis was performed" and "As shown in Table D-3, the refined visibility impact analysis predicted that a 'just noticeable change' greater than 1.0 deciview would occur on a single day at only the PSD Class I Rawah Wilderness Area." After detailing the conservative assumptions used in the refined visibility impact analysis, the DEIS clearly concluded "Based on these numerous 'reasonable, but conservative' analysis assumptions, which may actually compound one another, the projected impacts represent an upper estimate of potential air quality impacts which are unlikely to actually be reached."

Also see responses to comments 11-2 and 13-2.

Comment 13-7. Scaling factors were initially developed to account for well heater operation schedules provided by the field operators. In the case of Jonah II, Snyder Oil Company provided specific well heater operating cycle information. The dehydrator heaters were estimated to operate year-round, for at most 15 minutes per hour. The separator heaters were estimated to operate from October through April, for at most 15 minutes per hour. Scaling factors were used in the modeling to adjust full load emission rates to account for the heater operating schedules. Lacking similar specific operating cycle information, the dehydrator heaters in other well fields were assumed to operate year-round, for 30 minutes per hour, and separator heaters operated full time during the winter months (October – March).

In addition, the scaling factors developed for well heater schedules were used to adjust modeled well field emissions, based on the WDEQ-AQD recently permitted source inventory. Therefore, each set of scaling factors varies between each well field to account for sources that were included in the WDEQ-AQD emissions inventory.

Comment 13-8. The Bridger transmissometer data base includes the category "number of readings not in average due to weather." All 24 hours in Julian day 146 were excluded due to weather. There is no code indicating exactly what the weather was during that hour although the relative humidity was at or above 93% for 17 hours. Since the measured visual extinction on day 146 is not known, then the refined visibility analysis (Method 4) can not be applied.

Comment 13-9. As clearly reported in of the Air Quality Impact Assessment Technical Support Document text (Volume II -5.2 Visibility Impacts), "Any one-day and two-day gaps throughout the year are filled by interpolation of measured extinction values for the previous valid day and the following valid day. This brings the number of valid days of analysis for the Bridger Wilderness Area to 307 (267+16+14), and for Rocky Mountain National Park to 319 (276+19+24), providing nearly 84% and 87% data recovery, respectively."

In addition, Appendix E (a) - Daily Summary of Bridger Transmissometer Data indicated that approximately 65 per cent (2461 hours of the total 3765) of the invalid hours were weather related for which no visibility impact analysis can be performed. Similarly, Appendix E (b) - Daily Summary of Rocky Mountain National Park Transmissometer Data indicated that approximately 93 per cent (3479 hours of the total 3753) of the "invalid" hours were weather related.

This compares to only a 47 per cent valid 1995 nephelometer data recovery for the "Mt. Zirkel Wilderness Area Reasonable Attribution Study of Visibility Impairment" (Watson *et al* 1996), where the instrument was not operated 23 per cent of the year, 26 per cent of the possible data were effected by weather (even including measurements up to 95 per cent relative humidity), and nearly 4 per cent other invalid data. The theoretical maximum data recovery for reconstructed extinction from IMPROVE fine particulate samplers is only 29 per cent (two 24-hour samples per week).

The DEIS clearly used and reported the most complete and representative background optical data available to predict potential visibility impacts from the Proposed Action and Alternatives. In addition, it is just as possible the missing 13 to 16 per cent transmissometer data would <u>not</u> lead to an under-estimation of potential impacts as "could lead to an underestimation of potential impacts."

Comment 13-10. The concern that using MM5 and observed data could lead to "double counting" of the precipitation (and therefore overestimation of the wet deposition) is not justified. The precipitation from MM5 was not added to the observed values. Rather, the data sets were merged in a way to give weight to the observed data in areas near the observational stations and to give weight to the MM5 data in areas where no observations were made. The MM5 data were adjusted to reflect the spatial patterns of precipitation in the PRISM (Parameter-elevation Regressions on Independent Slopes Model) data set, developed by Dr. Christopher Daly of Oregon State University (USDA-NRCS 1998).

Comment 13-11. The CALMET simulations did include terrain effects such as slope flows (ISLOPE=1) and terrain channeling (Froude number) effects (IFRADJ=1). The kinematics effects option was not used (IKINE=0) in accordance with the recommended (default) model settings because this option may produce unrealistically high wind speeds in Layer 2 when relatively small grid sizes are used. Any fine-scale simulations with IKINE=1 could potentially contain

inappropriate Layer 2 winds.

Comment 13-12. The context in which the data were used must be considered. In this project, unlike the Mount Zirkel Visibility Study, hourly MM5 predictions on a 20-km grid were available to initialize the CALMET wind fields. As indicated in the Air Quality Impact Assessment Technical Support Document text (Volume II - 3.3 Meteorological Data Base), the QA/QC protocols followed at the secondary meteorological sites were less stringent than those required under EPA PSD monitoring guidelines (ARS 1997). There is also a question as to the siting of some of the monitors and the representativeness of the data relative to larger scale flow patterns. Although the data might be quite suitable for the purposes for which they were collected, they do not meet the requirements for modeling purposes. Rather than potentially degrade the wind fields by introducing potentially non-representative data into a relatively data-rich environment (due to the MM5 data), the secondary sites were not used.

Comment 13-13. The general IWAQM recommended procedure is to exclude puff splitting. The puff splitting option is available to address special cases where there is evidence of important shear effects, but for the CD/WII Proposed Action and Alternatives, there is no reason to believe shear is important during the critical periods.

Comment 13-14. The actual particle size distribution of the potential particulate matter emissions in unknown. In reviewing data for mining operations, the particle sizes varied significantly based on the type of operation and the meteorological conditions. The use of a 10 micron diameter is one limit of the possible range. It is possible to model a lower range as well, and to put bounds on the uncertainty of the results due to this unknown factor. However, primary particulate matter was not a significant factor in the air quality impact analysis (including critical visibility events), so this detailed further analysis is not necessary.

Comment 13-15. Because local ammonia monitoring data are not available, the CALPUFF default value of 10 ppb ammonia was used in the analysis. This value is designed as a conservative assumption, favoring the formation of secondary particulate matter and resulting visibility impacts. Assuming only 1 ppb background ammonia could limit gas to particle conversion, and understate potential visibility impacts.

Comment 13-16. The hourly relative humidity values used in the visibility calculations were derived from the nearest MM5 grid point to the receptor. A vertical average from the surface to 200 meters above the surface was used in the calculations. Although no detailed comparison of the MM5 relative humidity predictions to the measured values was done, the qualitative patterns produced by MM5 are reasonable. Given the known deficiencies of the observed data (i.e., limited or no data collected in the higher terrain areas, near-surface values only, potentially missing data, etc.), the comprehensive MM5 data were determined to be appropriate. Also see response to comment 13-17.

Comment 13-17. As clearly stated in of the Air Quality Impact Assessment Technical Support Document text (Volume II - 4.3 Meteorological Modeling Options), "The relative humidity used to determine F_m, has been computed as a 200-meter vertical average of the humidity predicted at the nearest MM5 grid point to the receptor. This allows for terrain effects on relative humidity to

be better evaluated than if surface-based relative humidity measurements at the NWS stations were used. The NWS stations tend to be located in flat areas at lower elevations than the sensitive areas of interest. The 200 m vertical average is intended as a compromise between the desire for a near-surface relative humidity value (reflecting the presence of the observer at the surface) and that for a vertical average to represent the distribution of the pollutants in the vertical sight path." Relative humidity measurements observed at the transmissometer location have the same limitation. This text also clearly stated "In CALPOST Method 2, the hygroscopic component of the background is subject to the same relative humidity adjustment as the modeled primary and secondary particulate matter concentrations." Also see response to comment 13-16.

END

05-5-00